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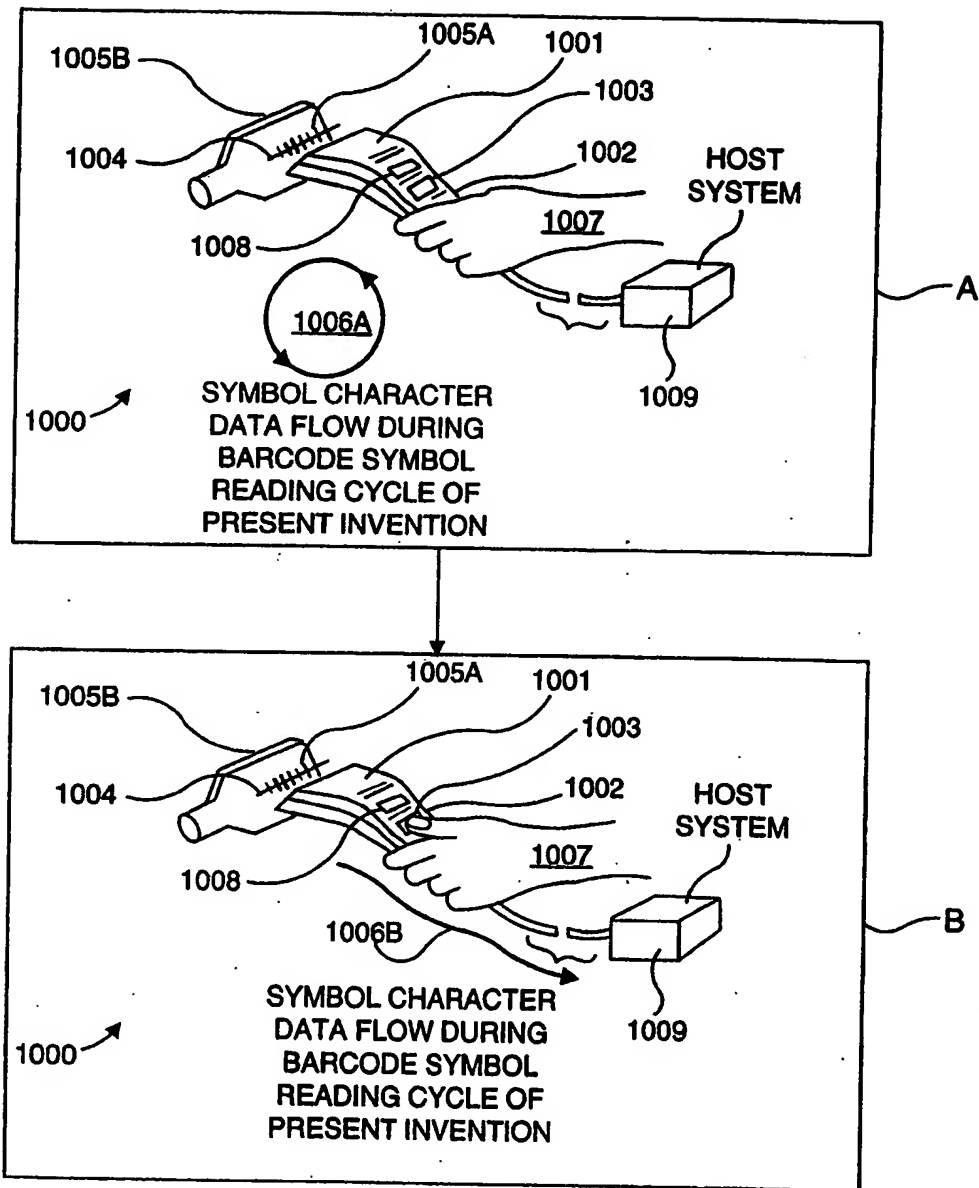


FIG. 1

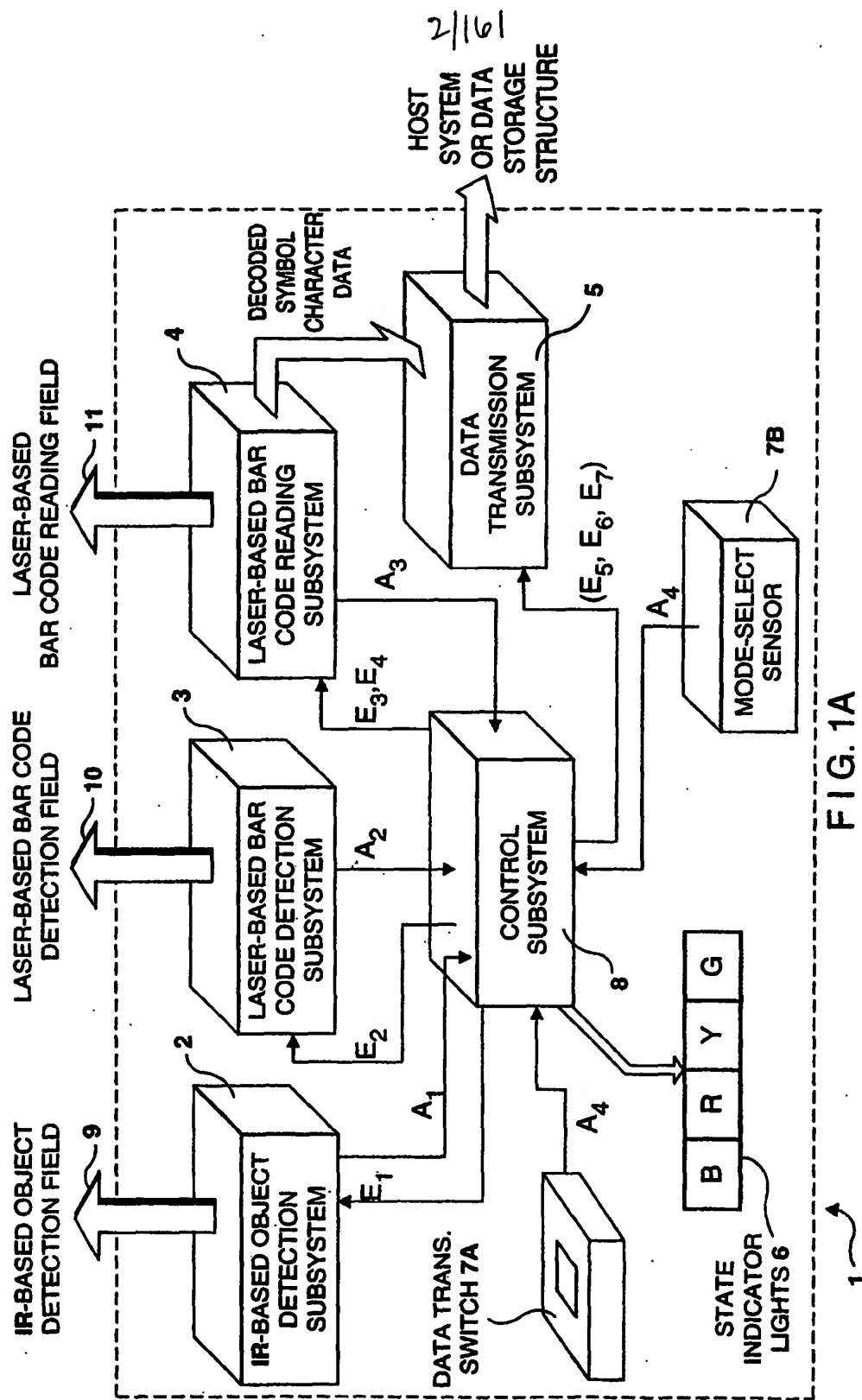


FIG. 1A

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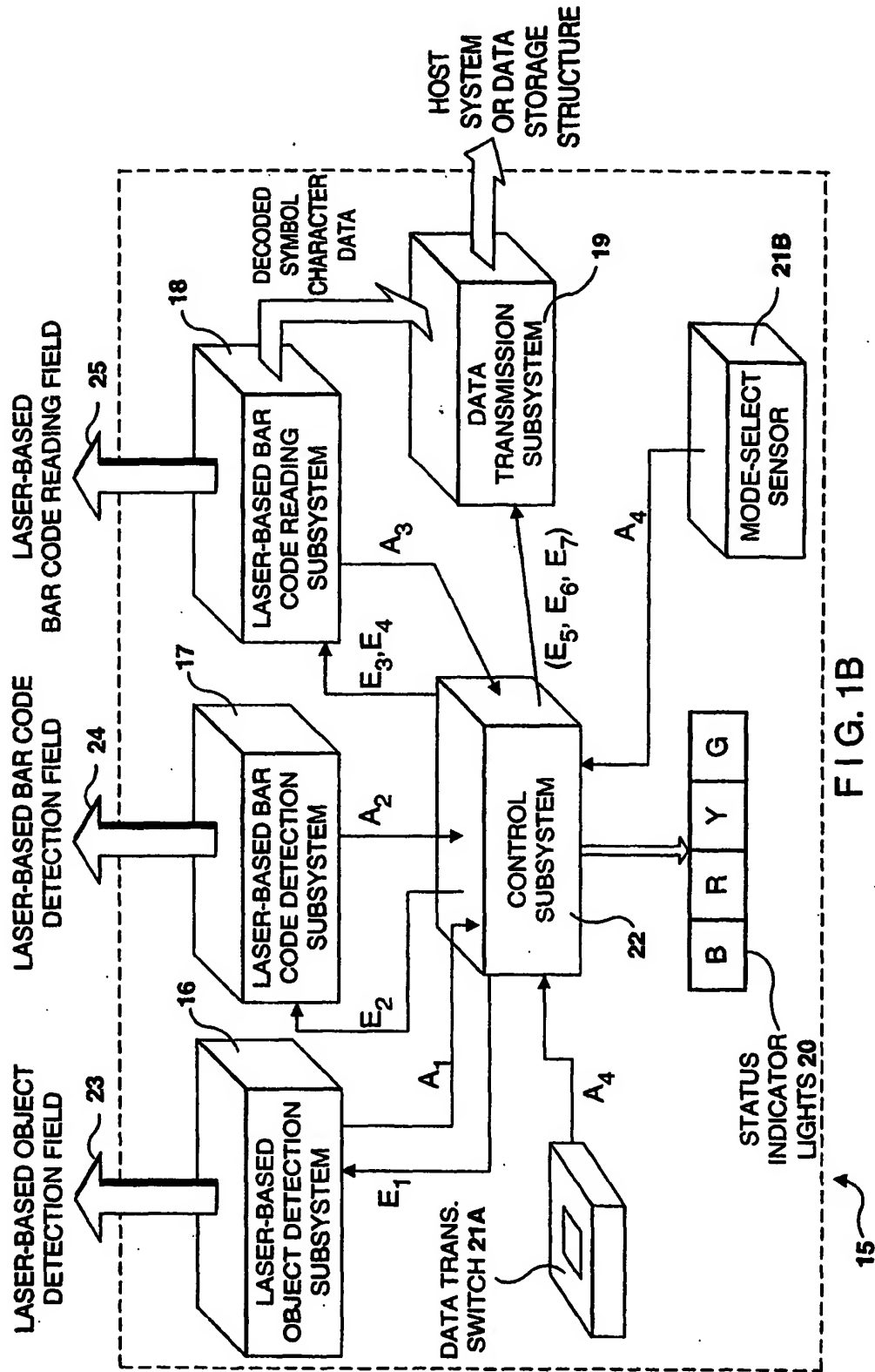


FIG. 1B

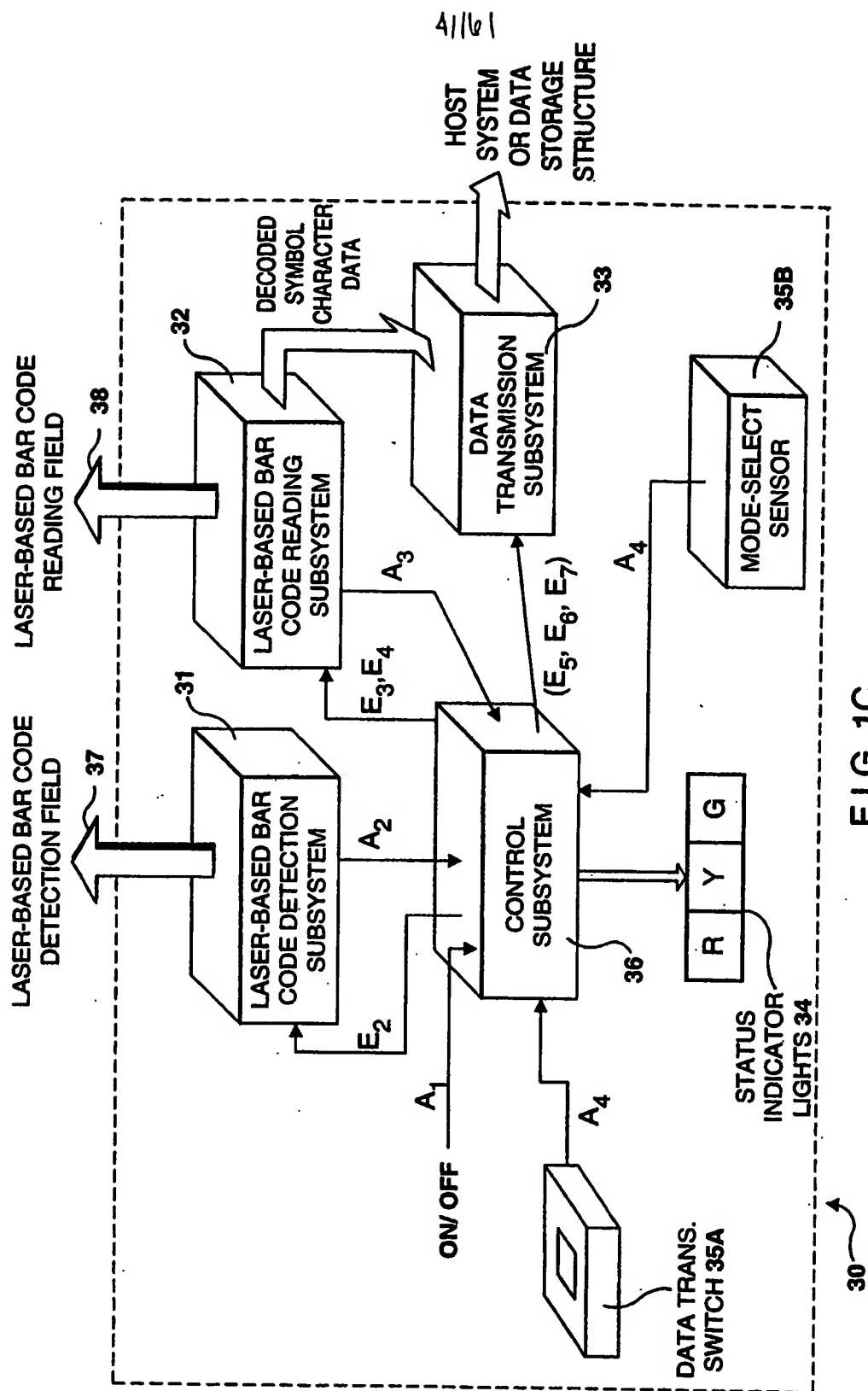


FIG. 1C

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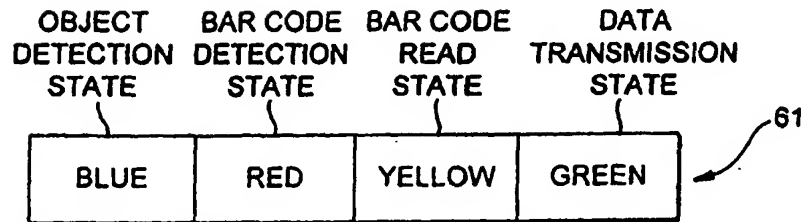
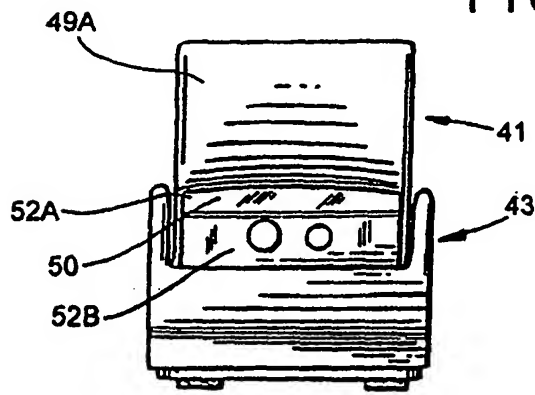
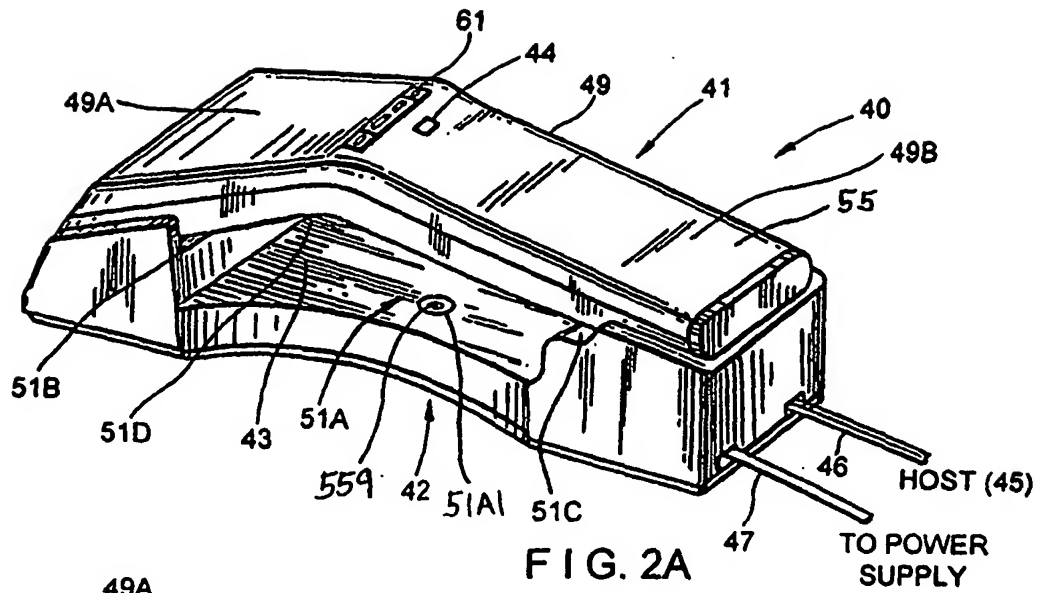
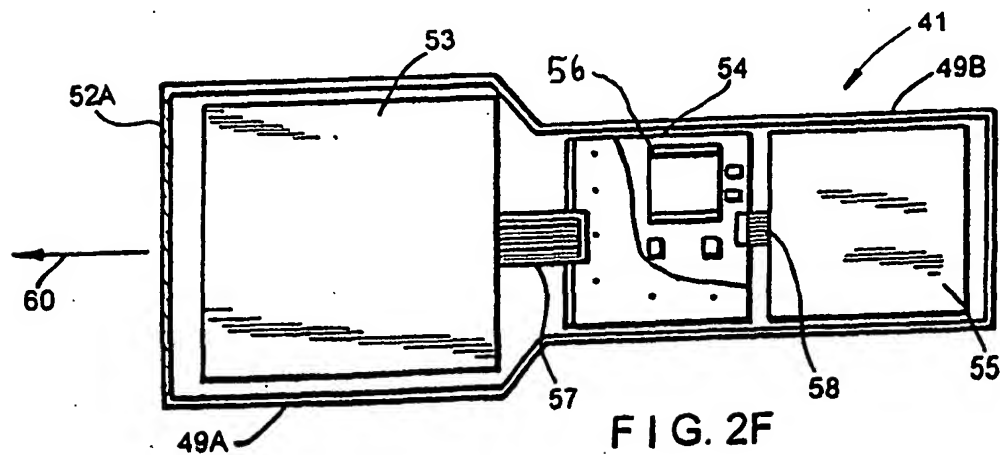
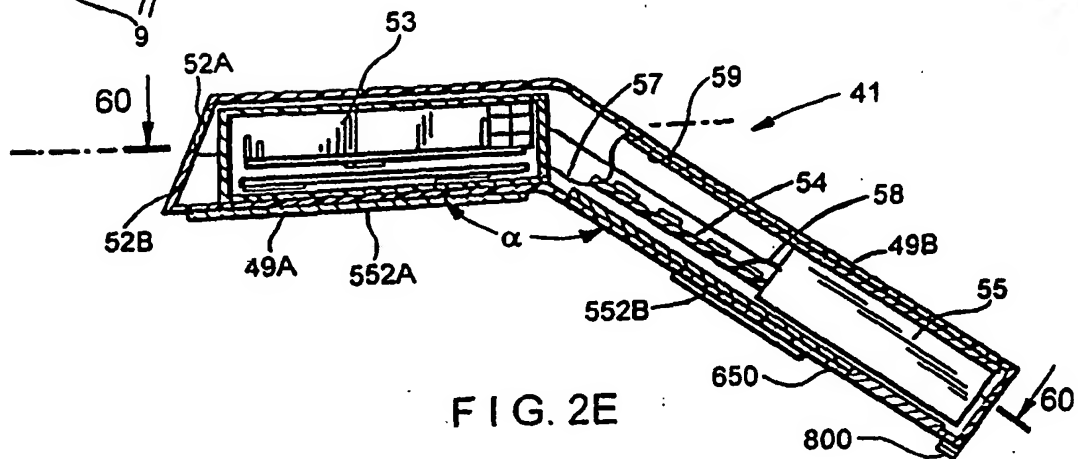
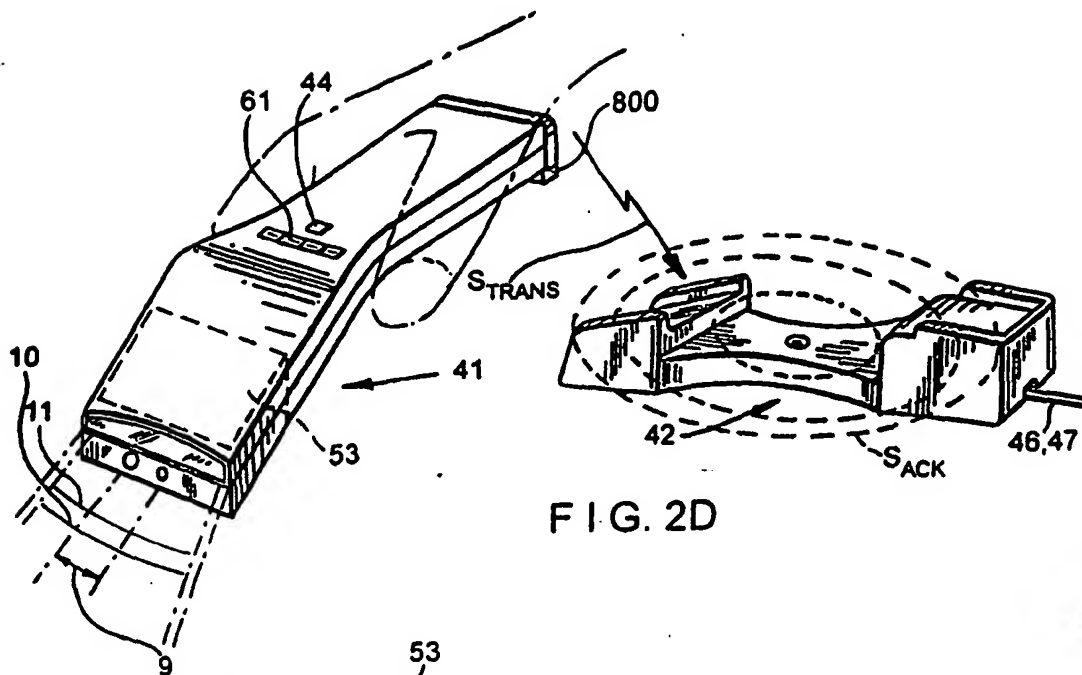


FIG. 2C

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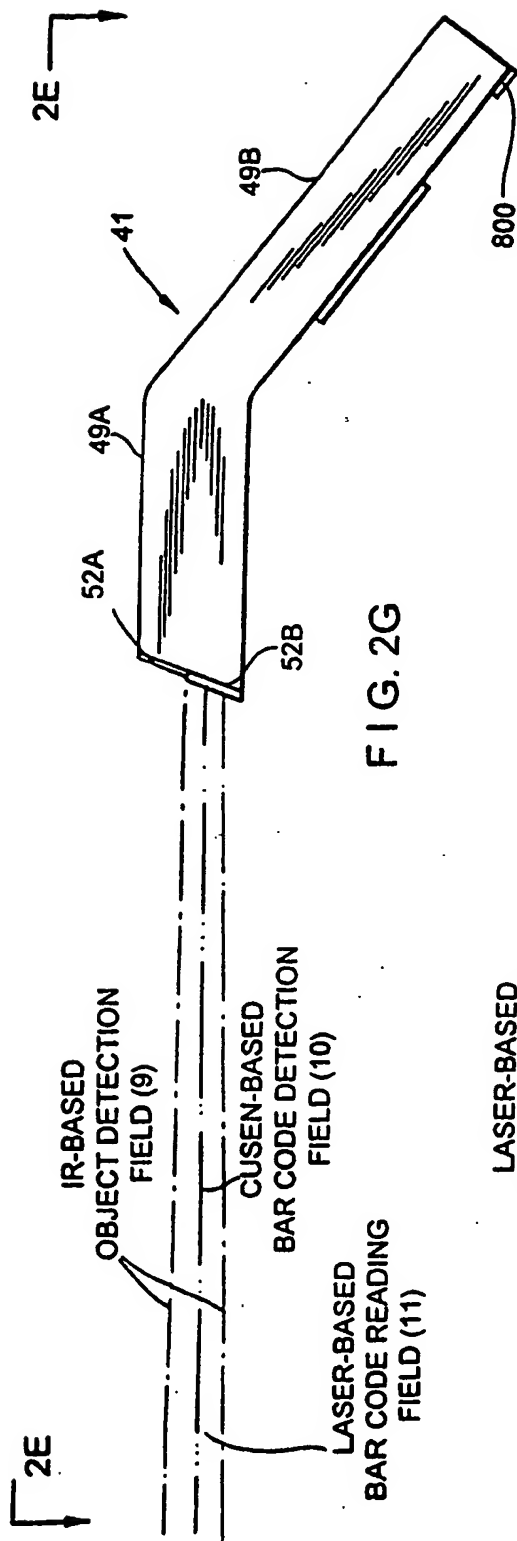


FIG. 2G

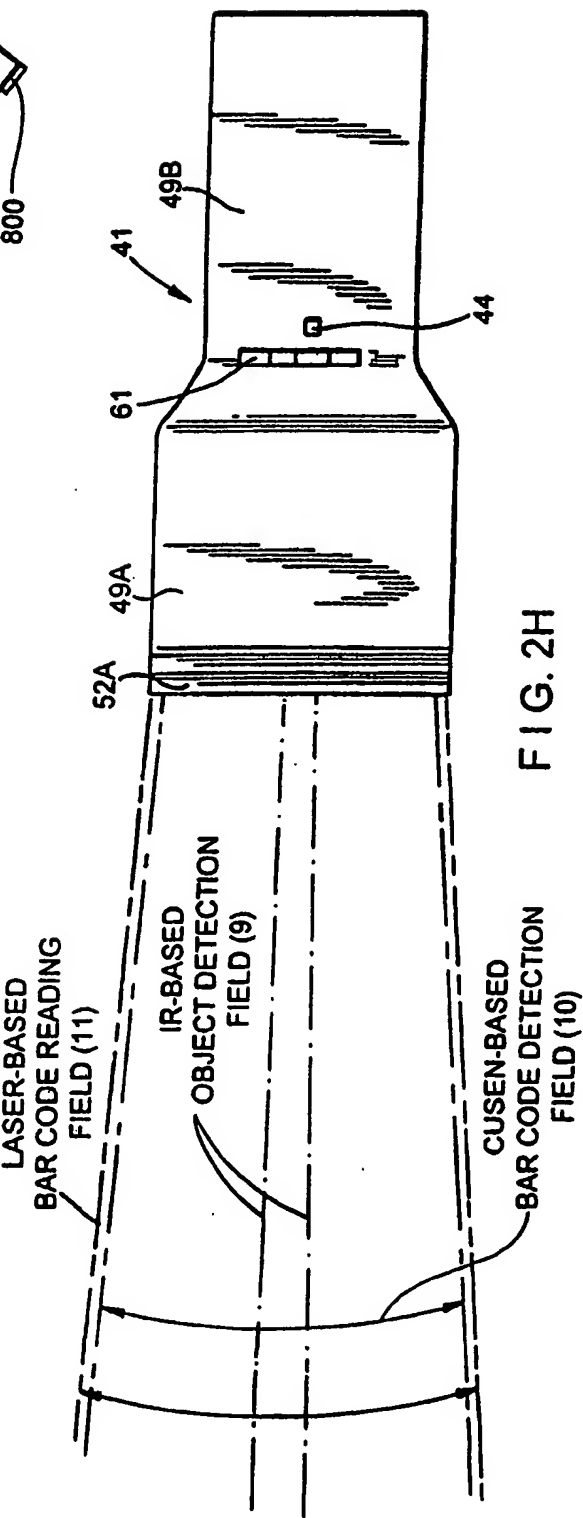


FIG. 2H

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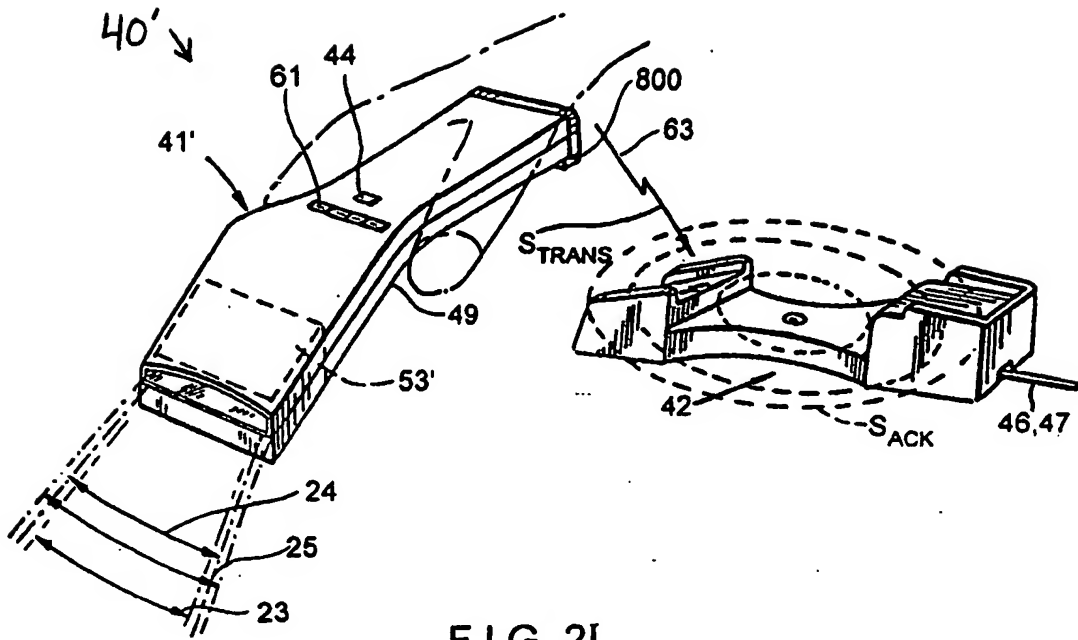


FIG. 2I

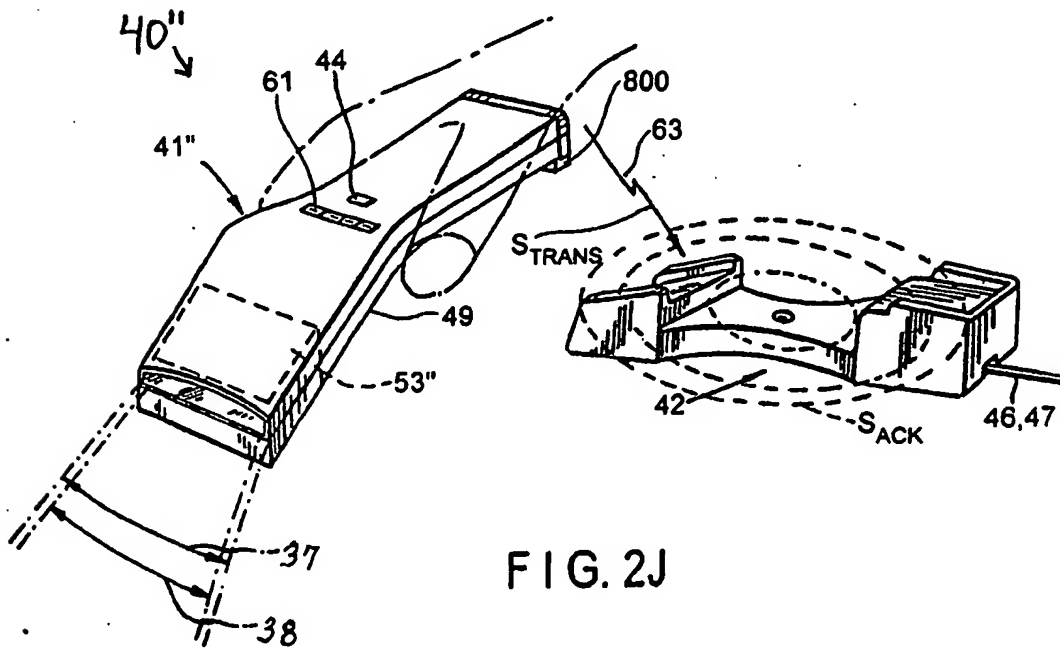
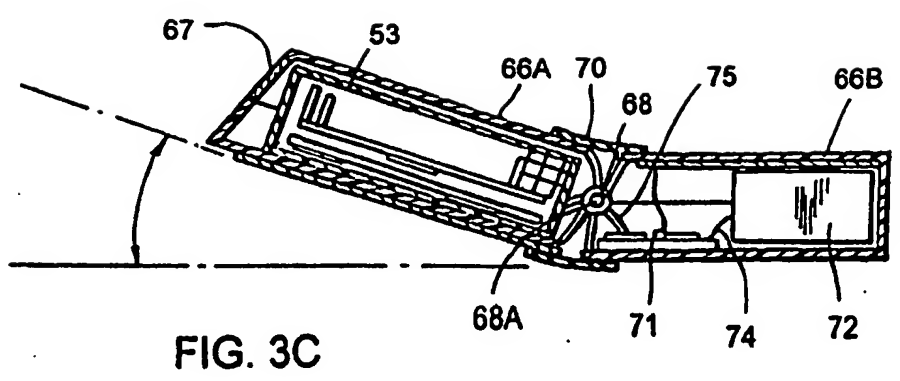
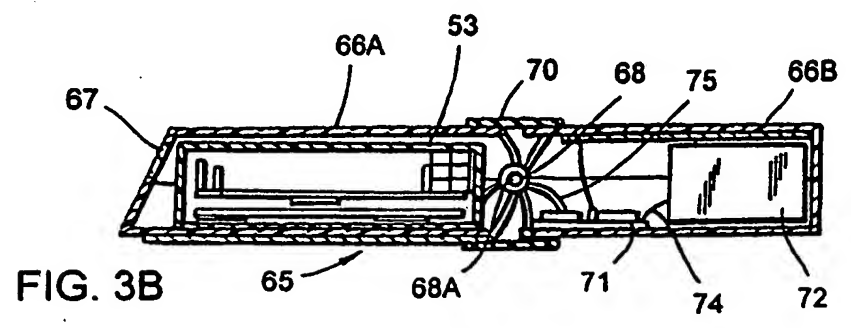
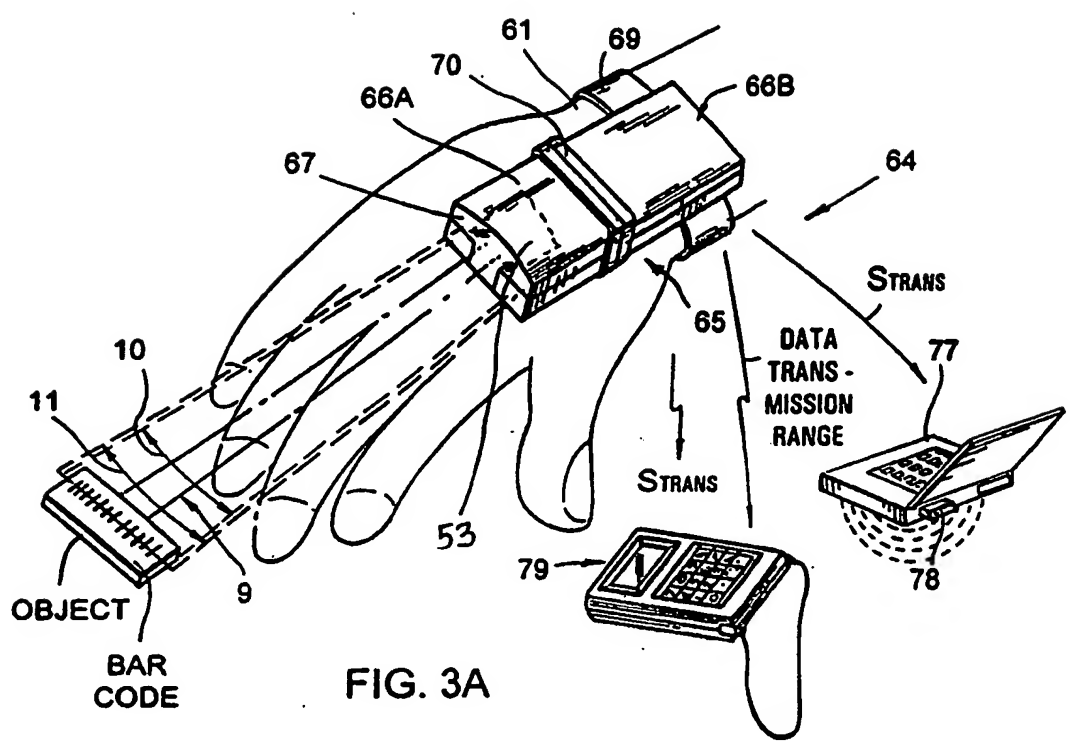
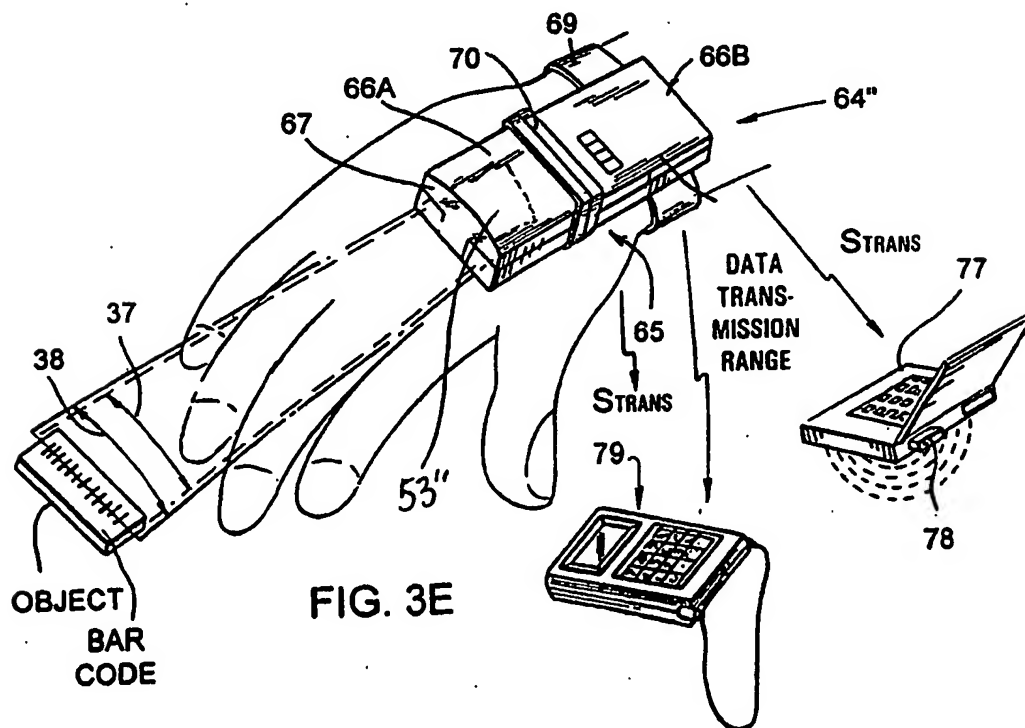
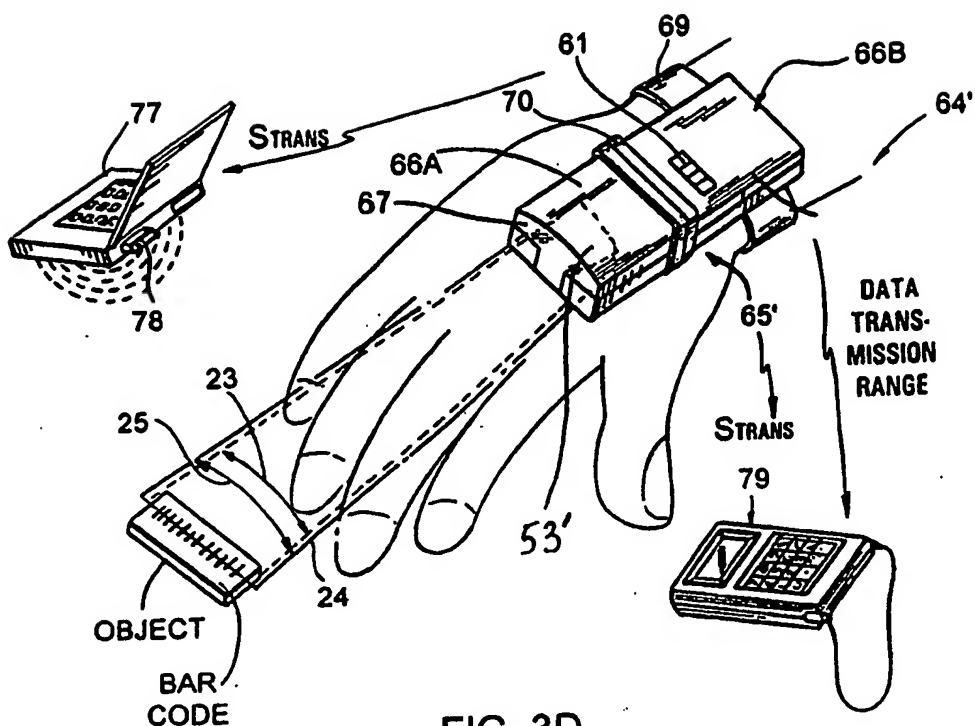


FIG. 2J

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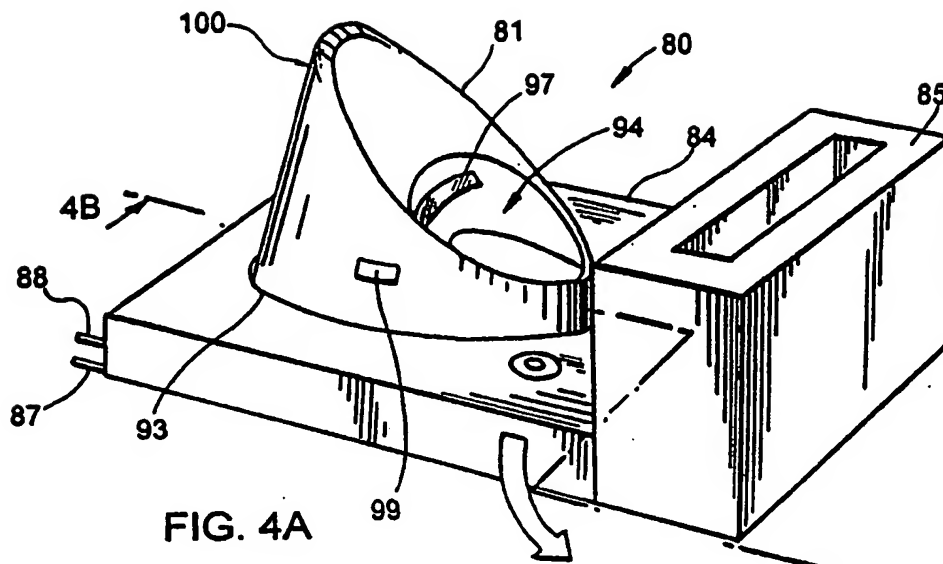


FIG. 4A

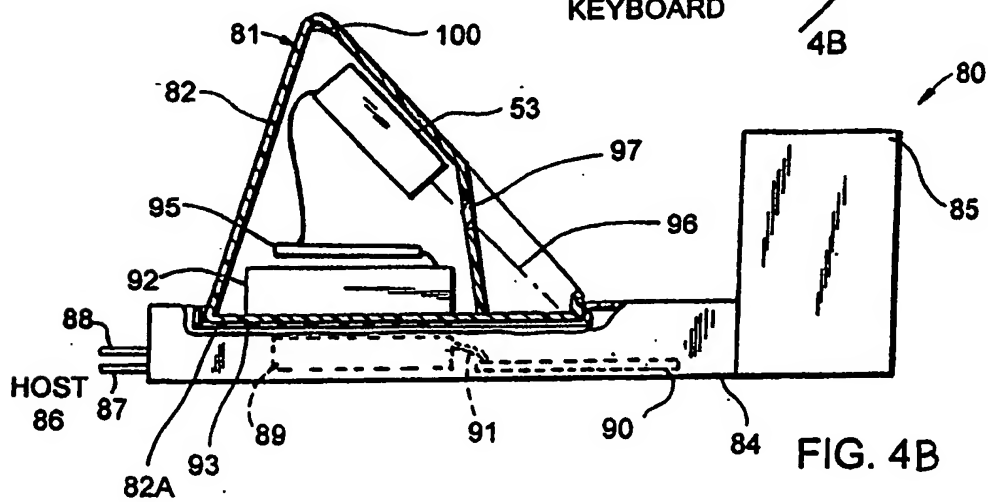


FIG. 4B

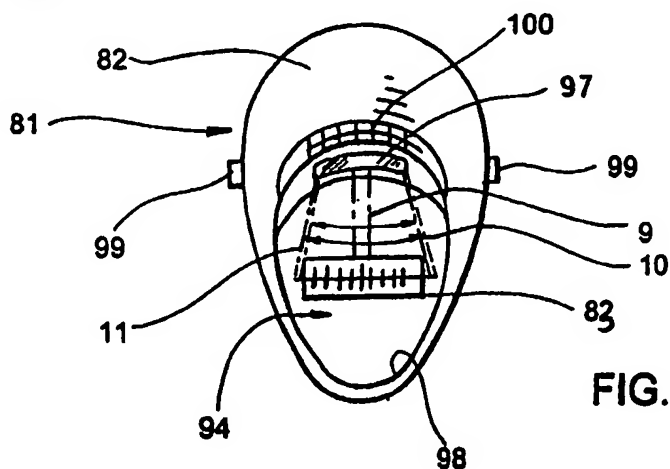
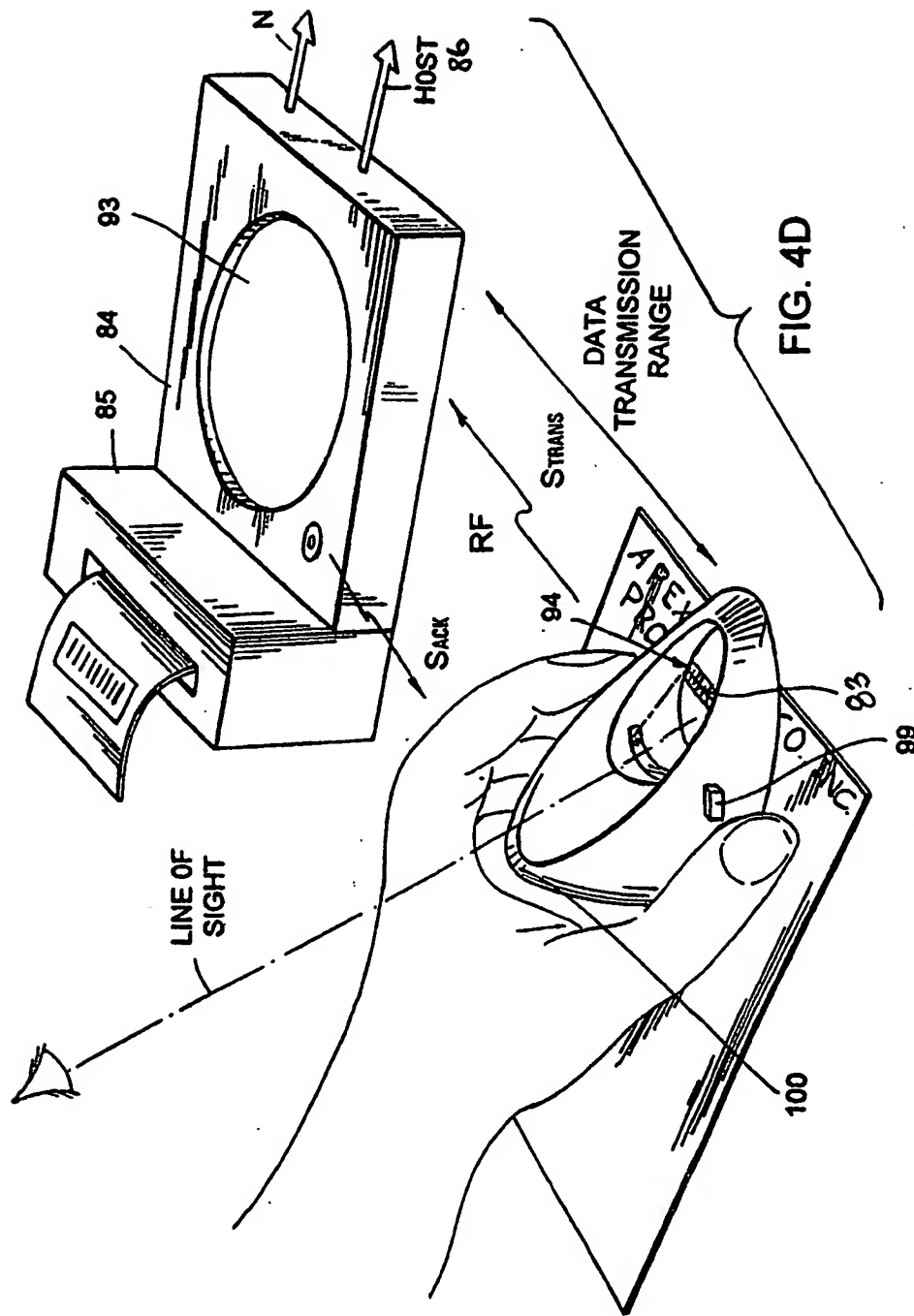


FIG. 4C



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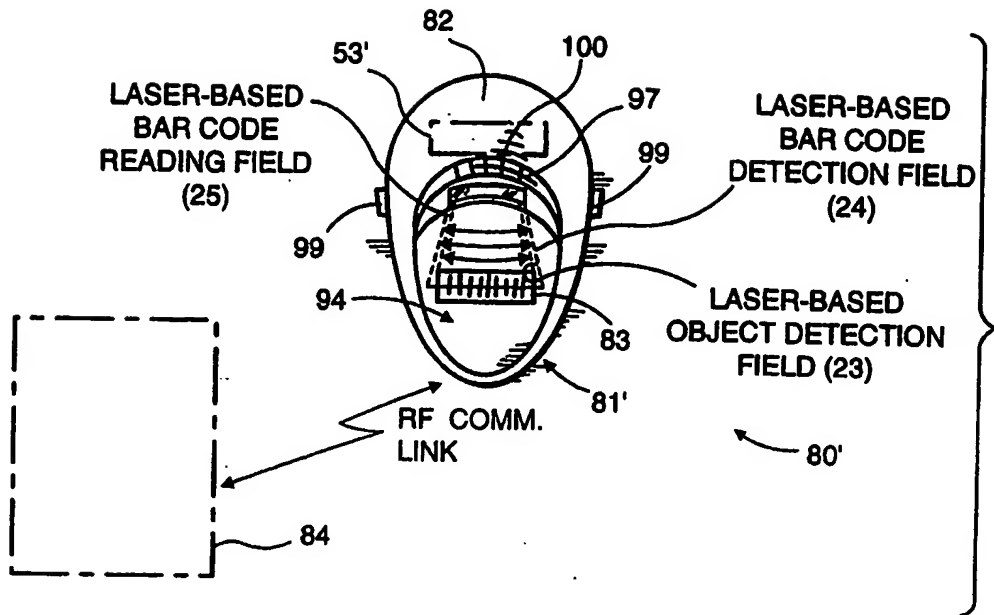


FIG. 4E

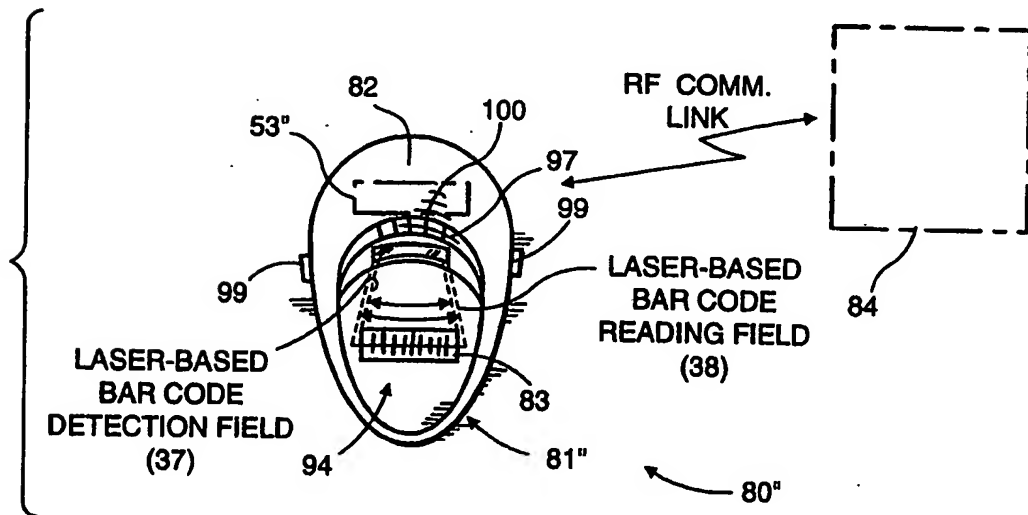


FIG. 4F

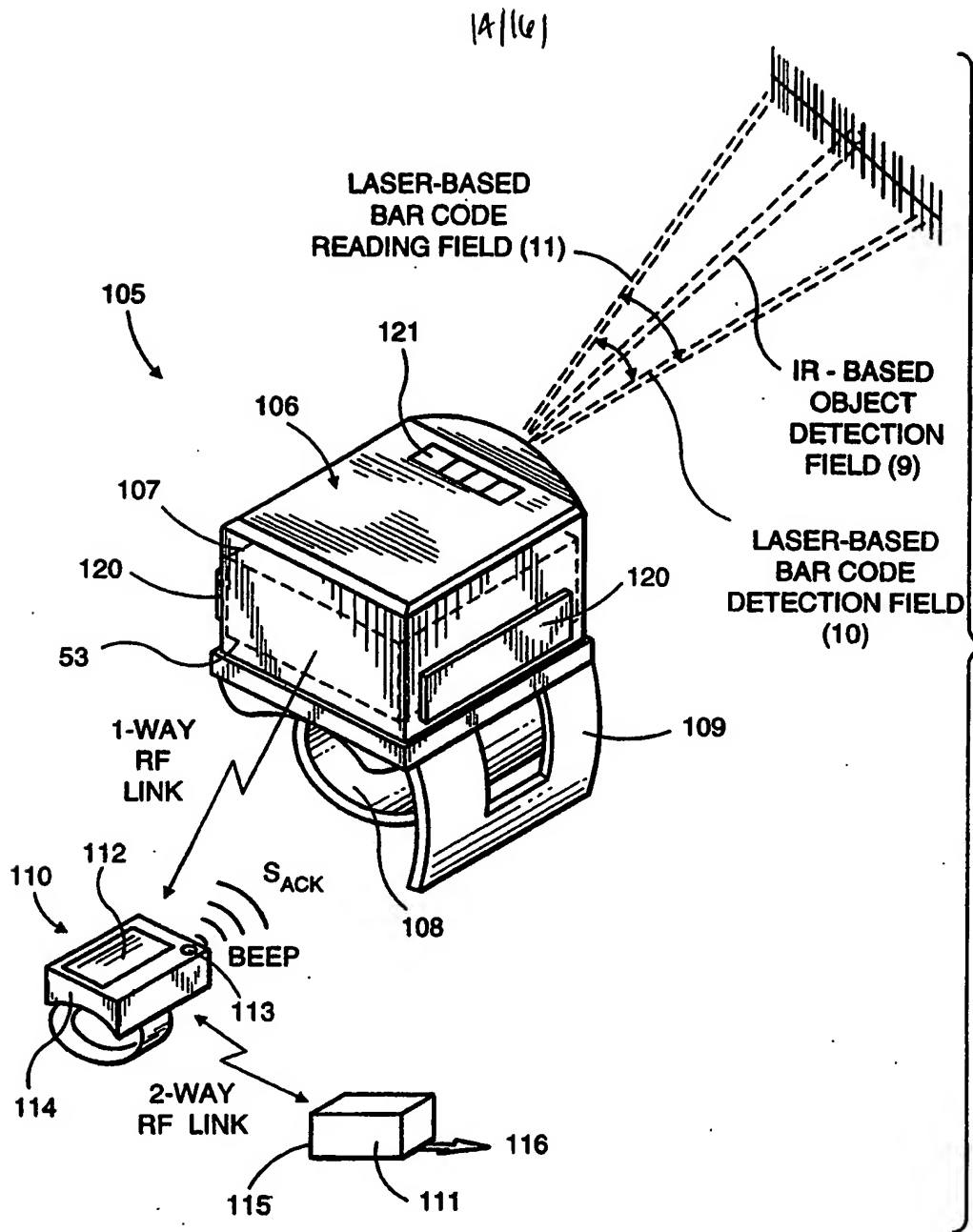


FIG. 5A

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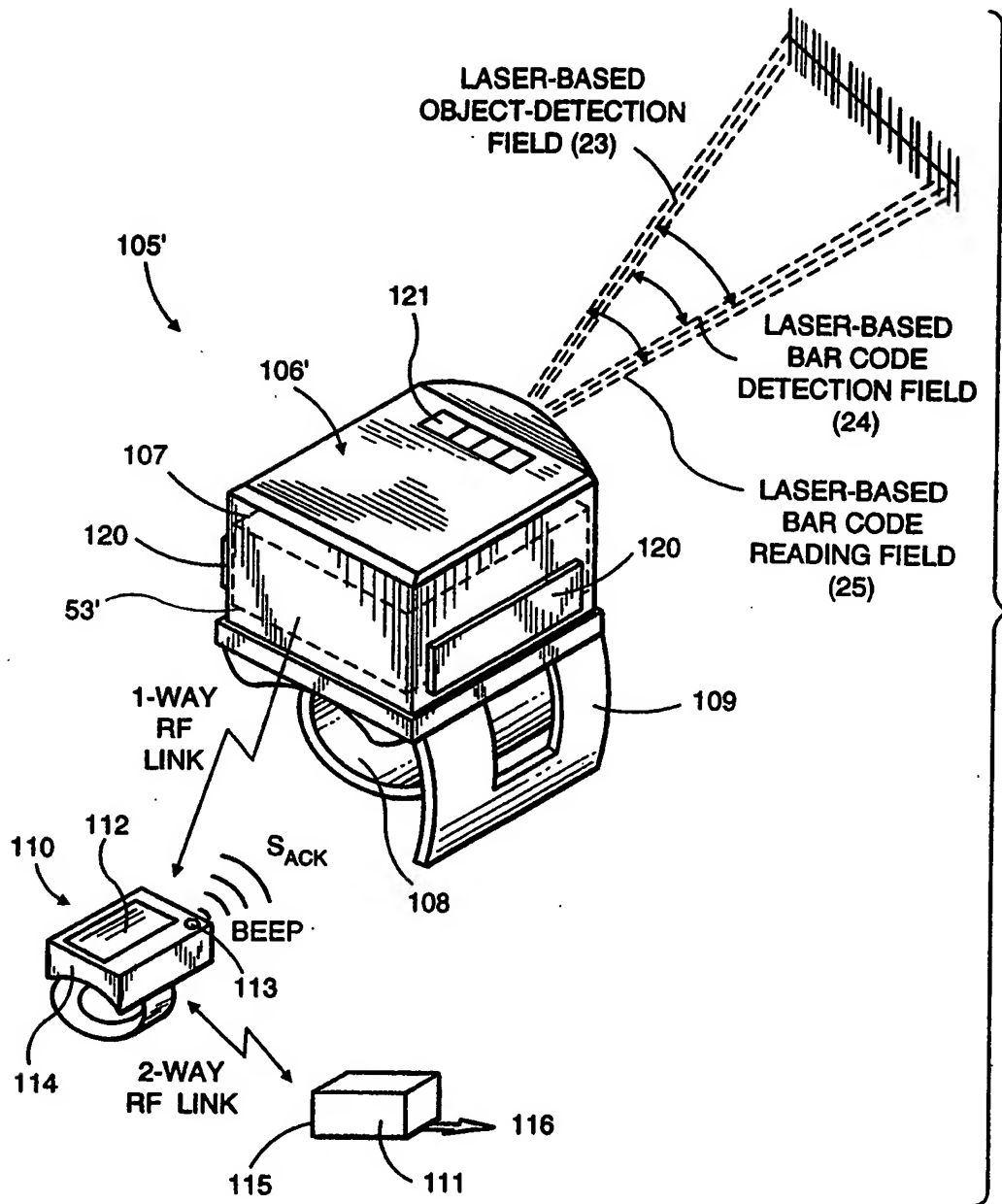


FIG. 5B

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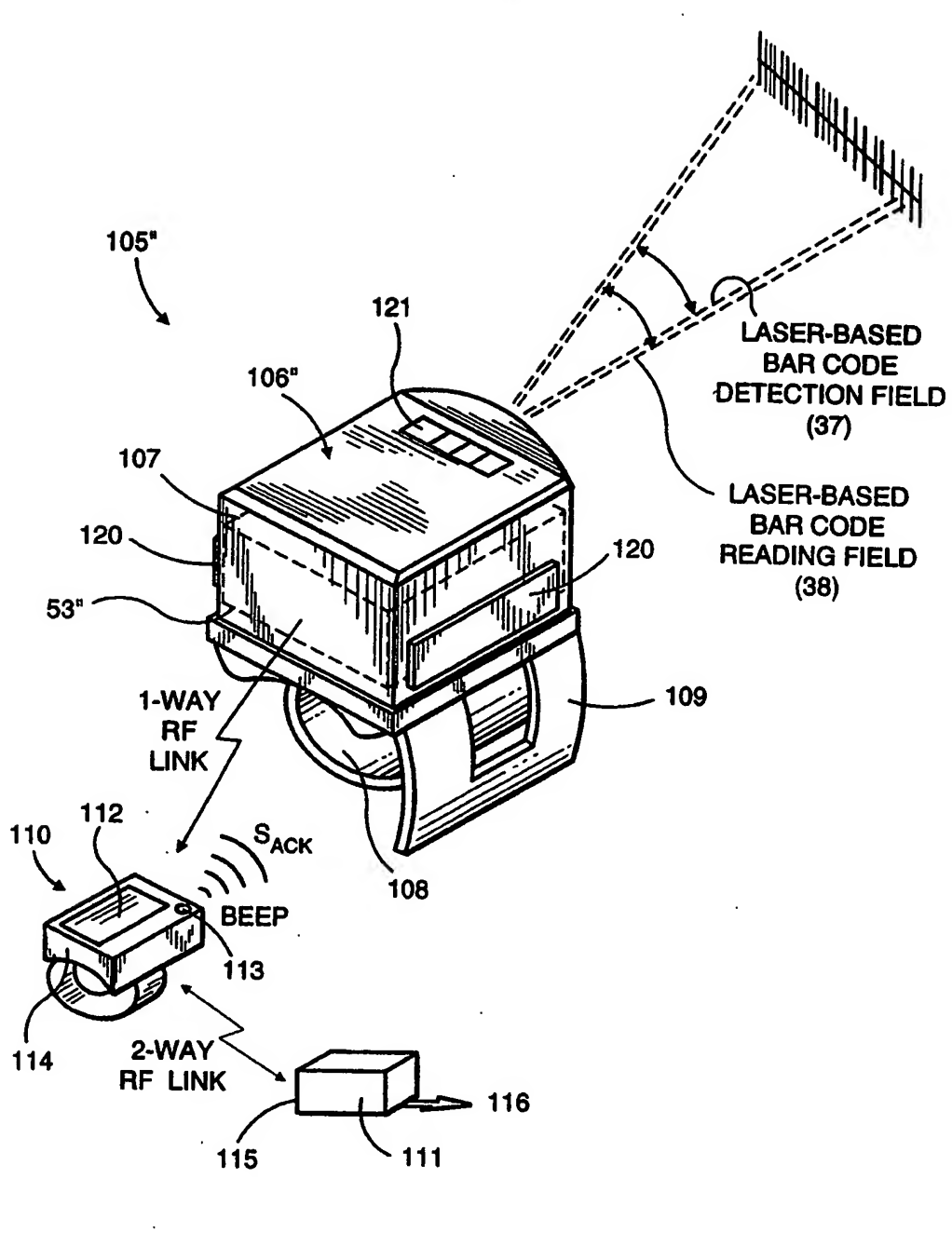


FIG. 5C

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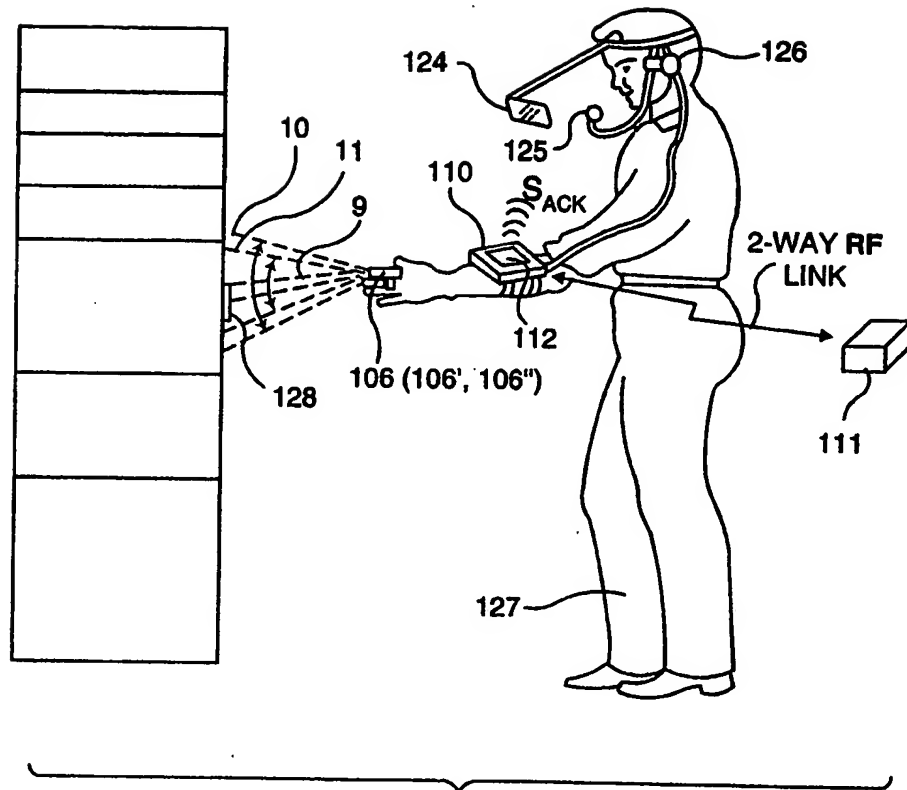
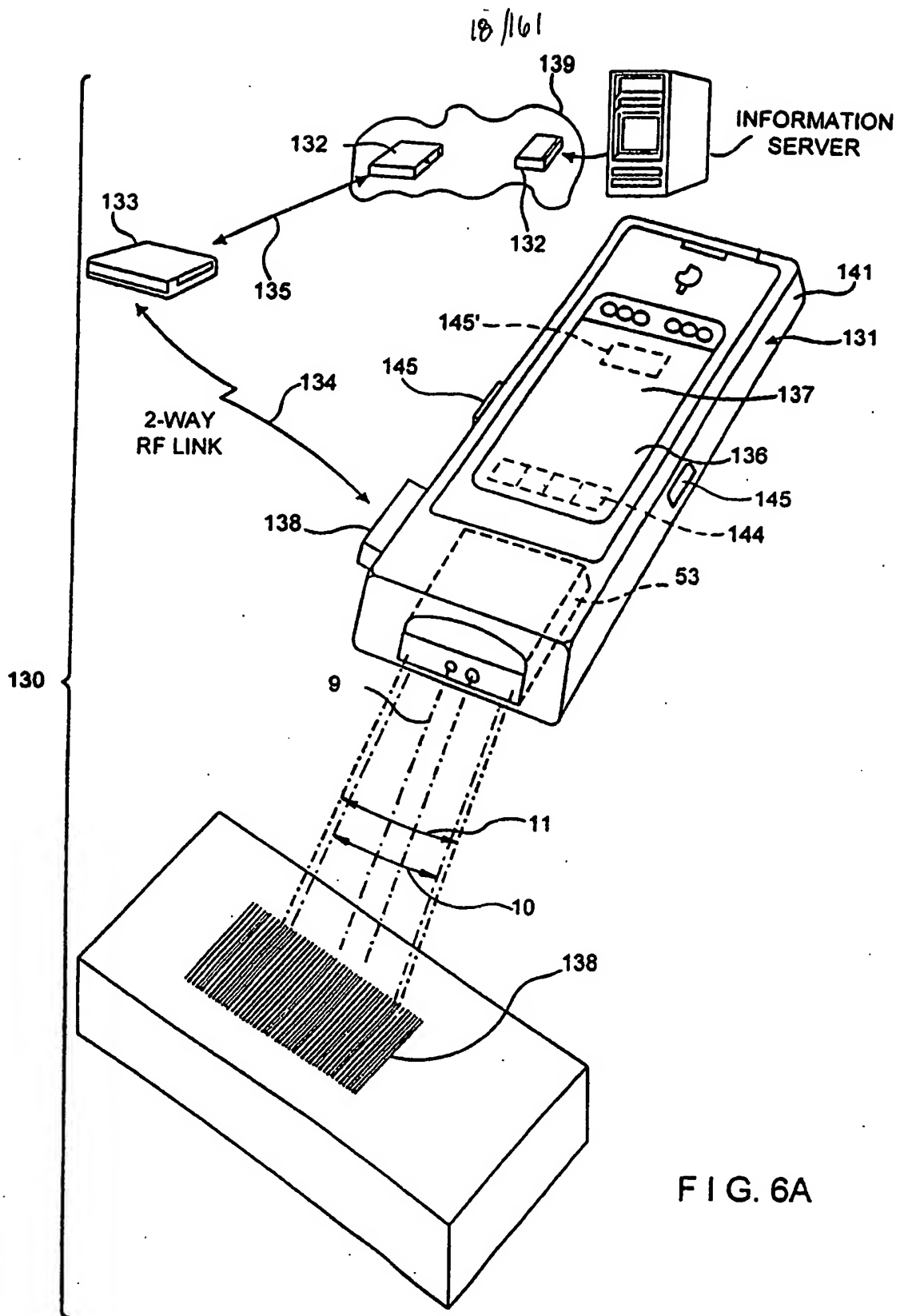
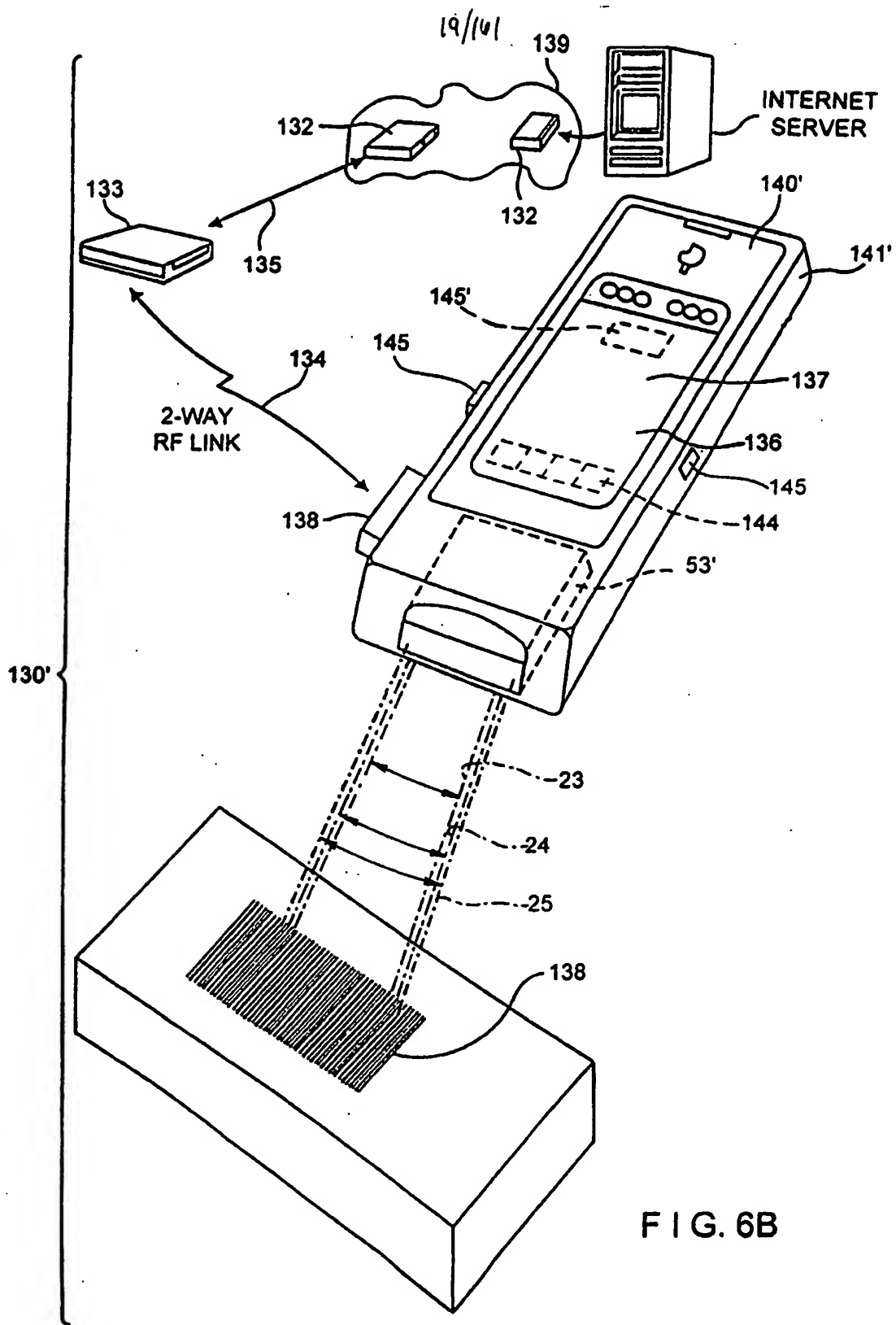


FIG. 5D





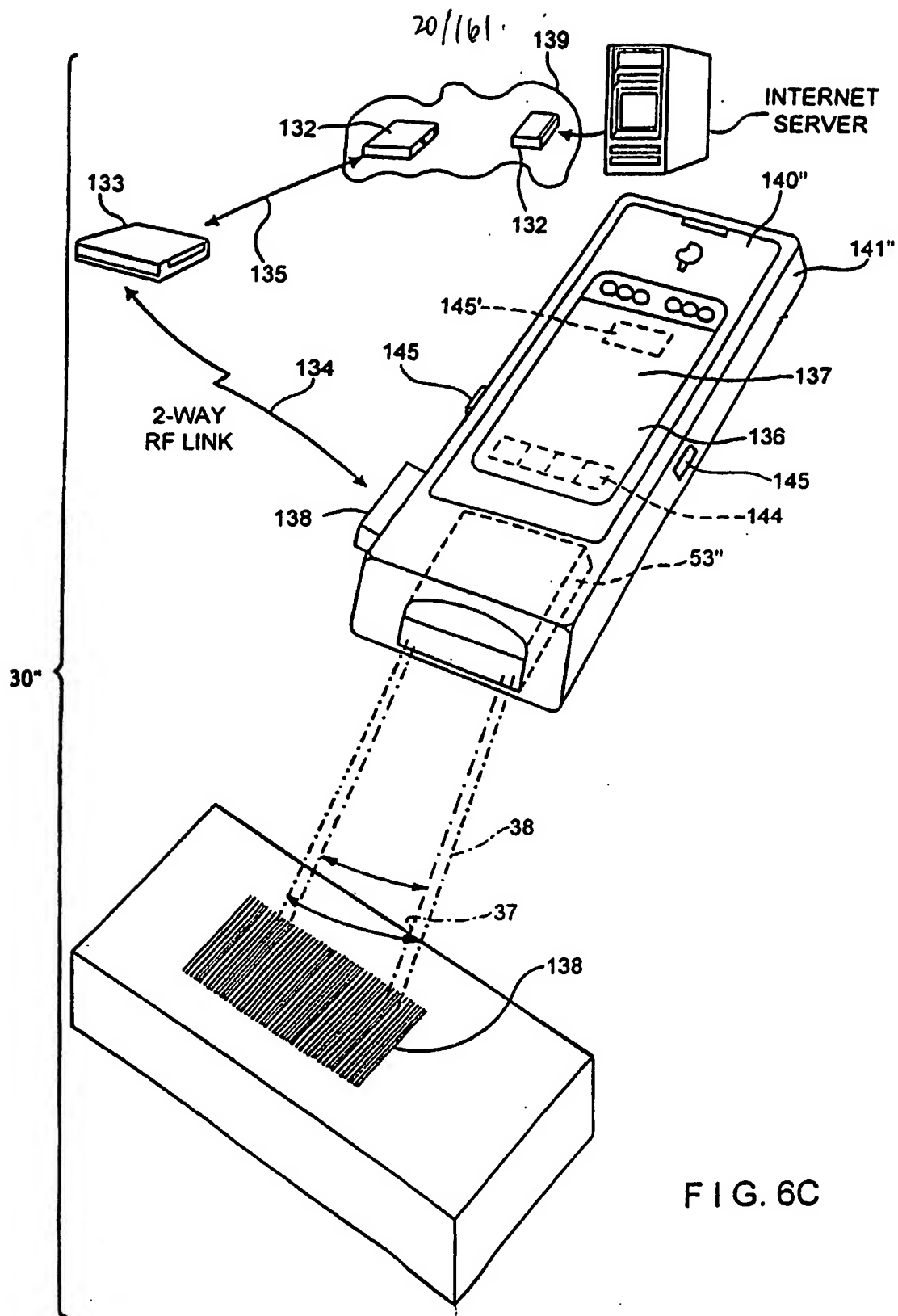


FIG. 6C

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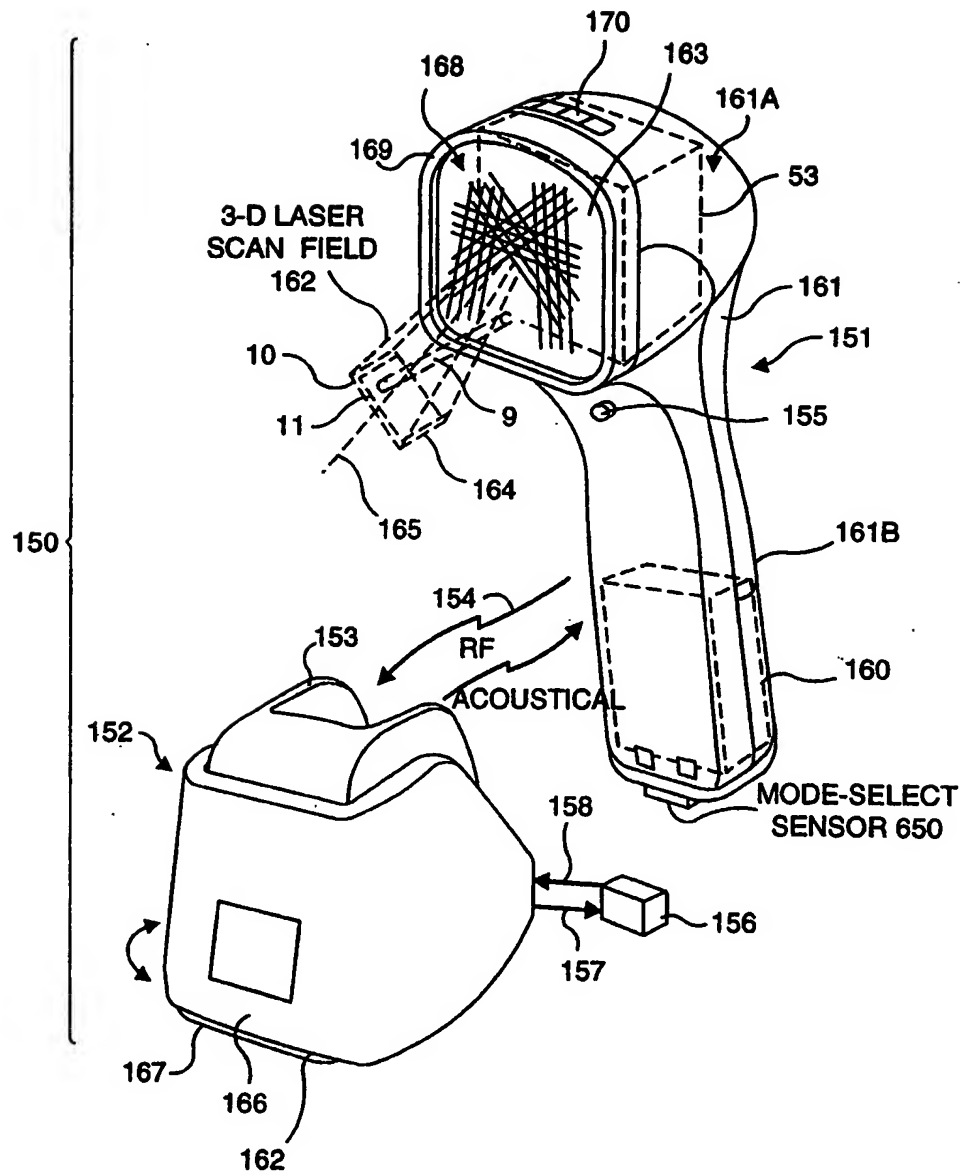


FIG. 7A

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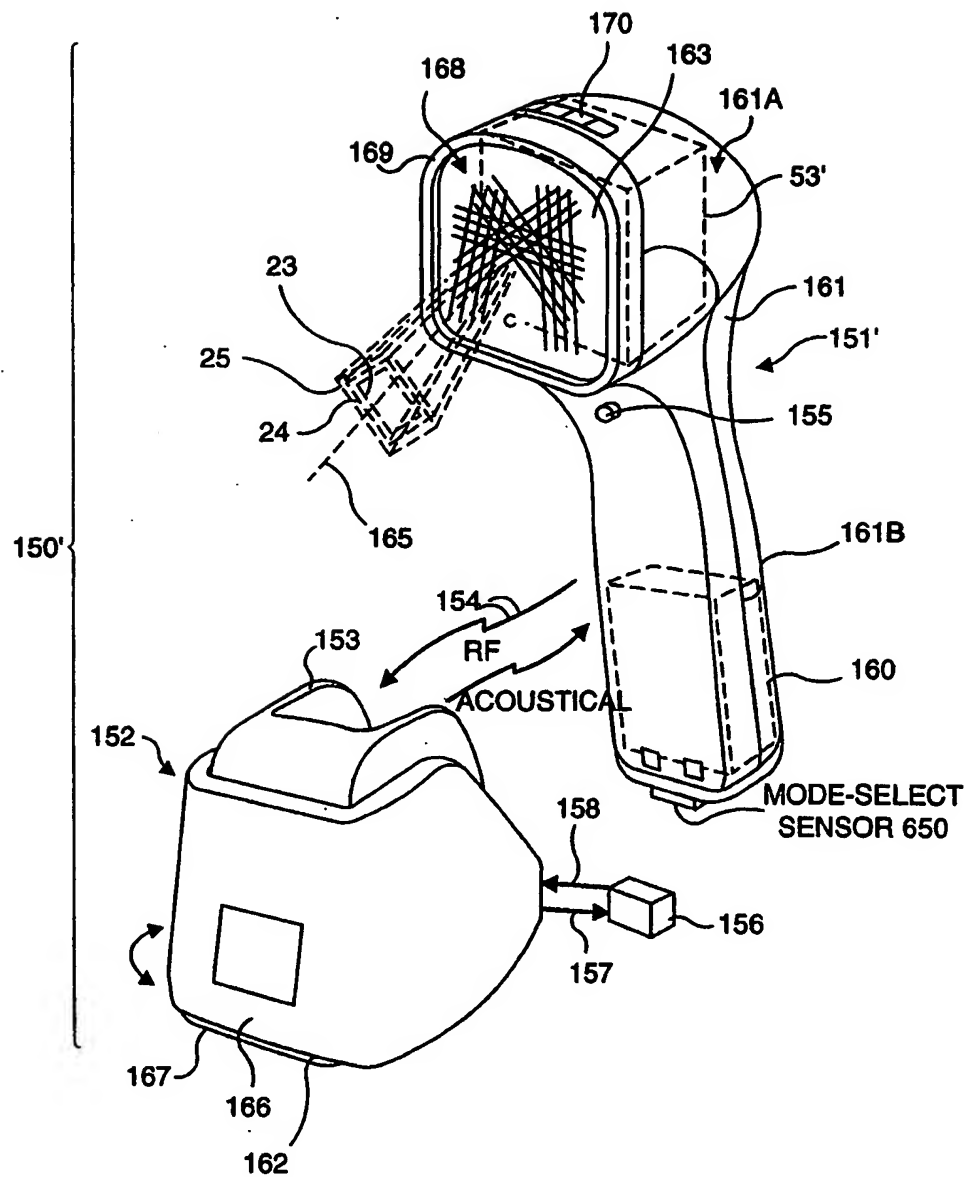


FIG. 7B

FIG. 7C

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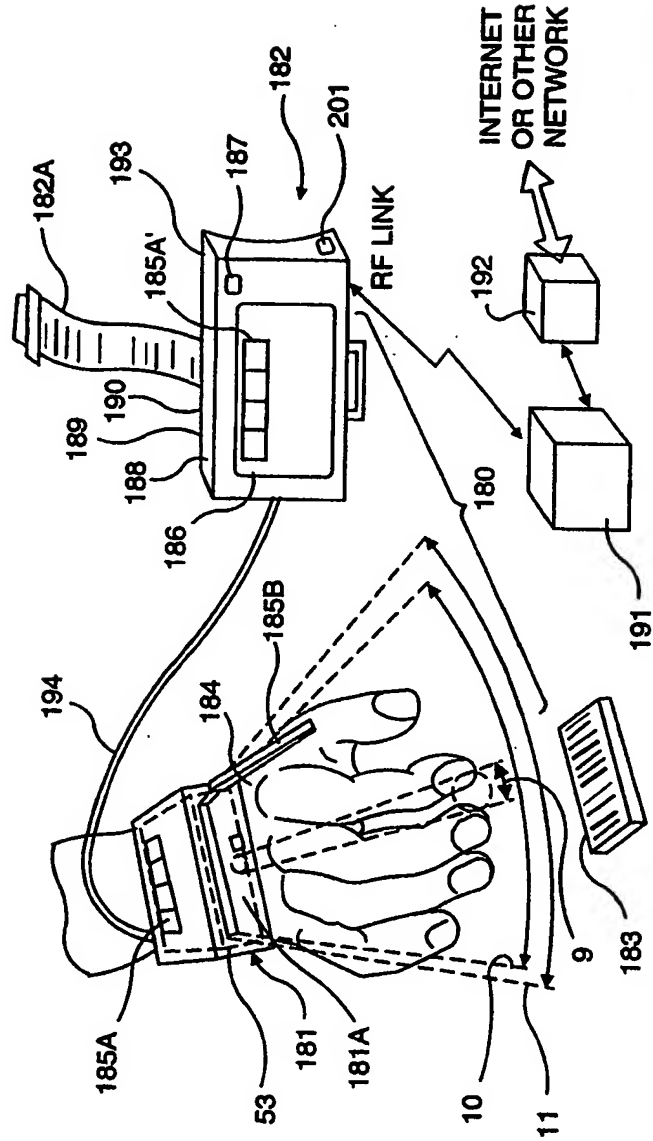


FIG. 8A

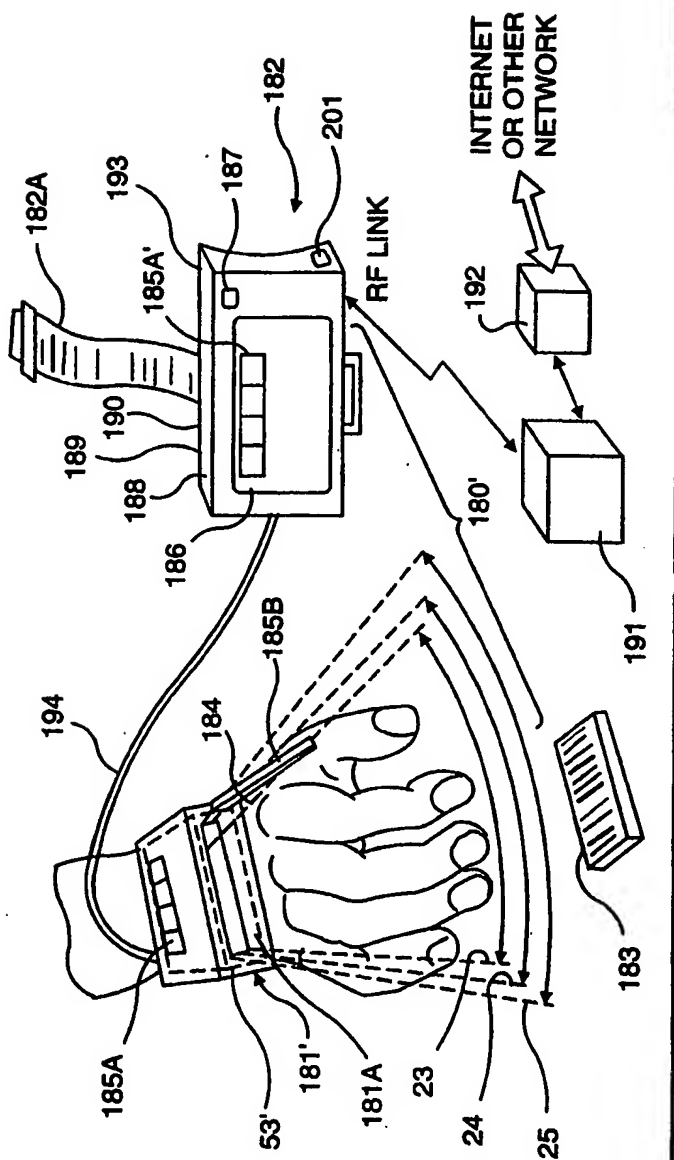


FIG. 8B

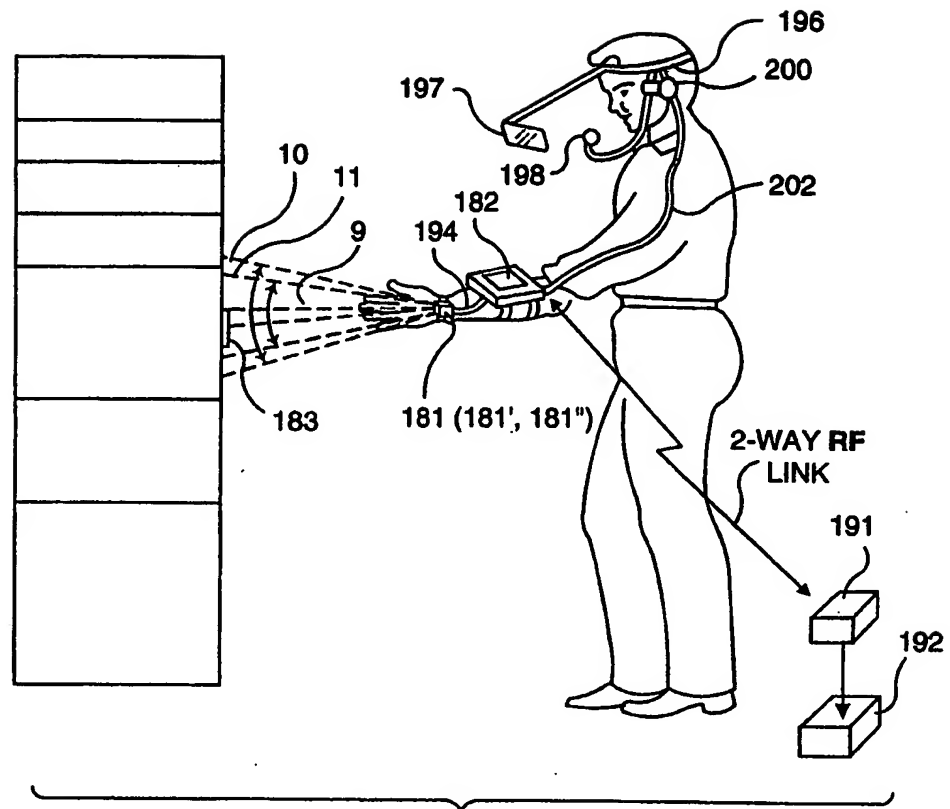
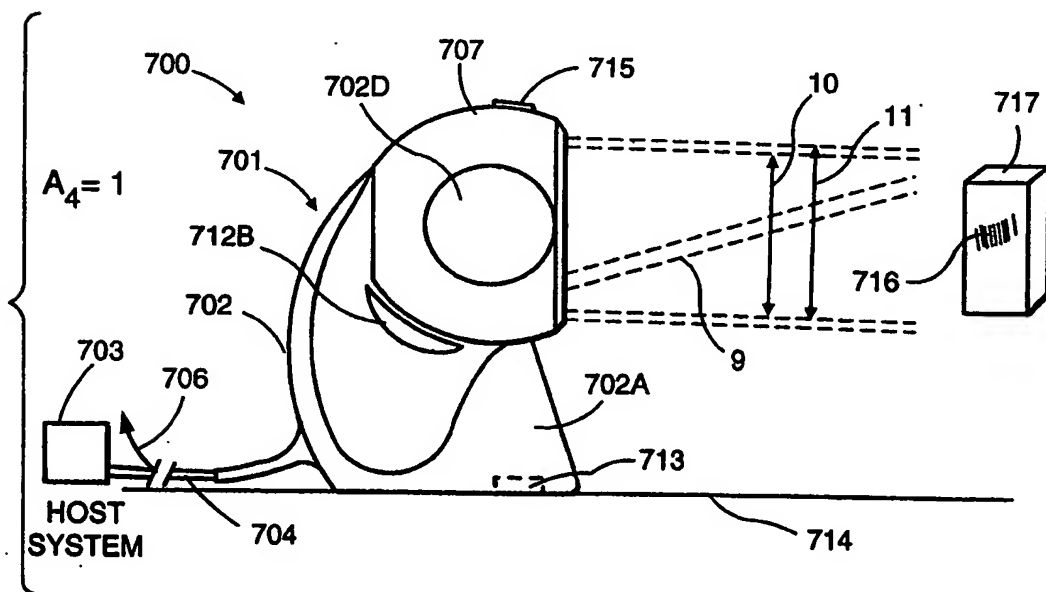
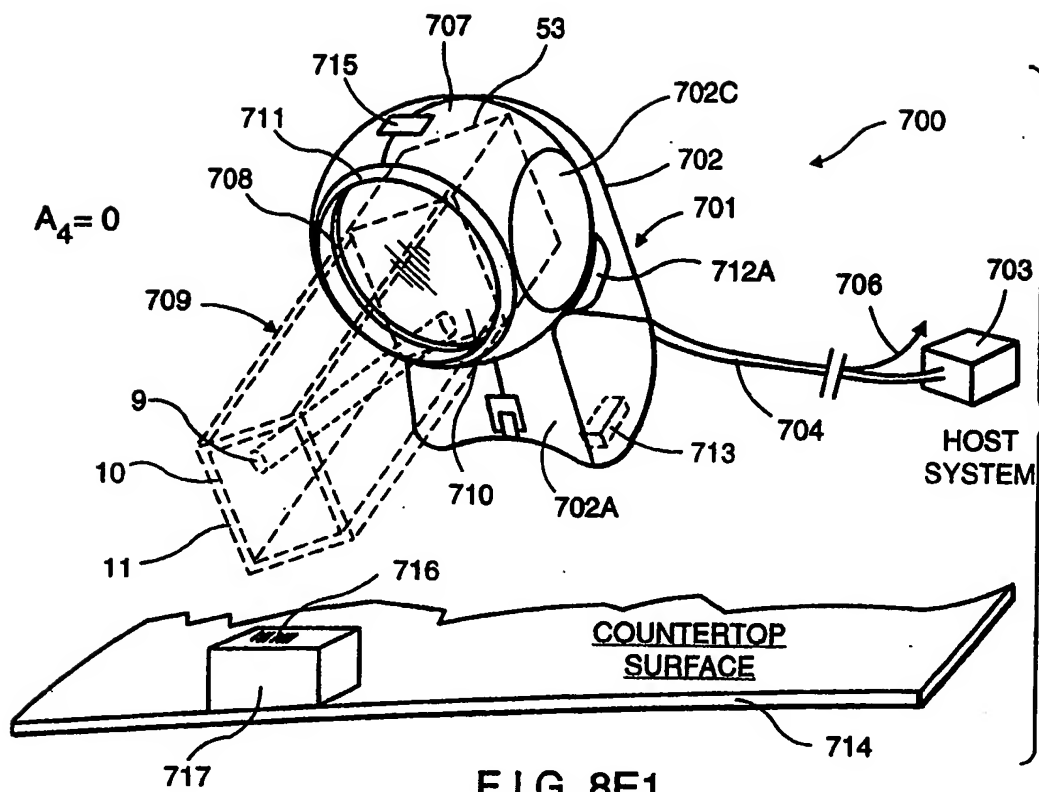


FIG. 8D

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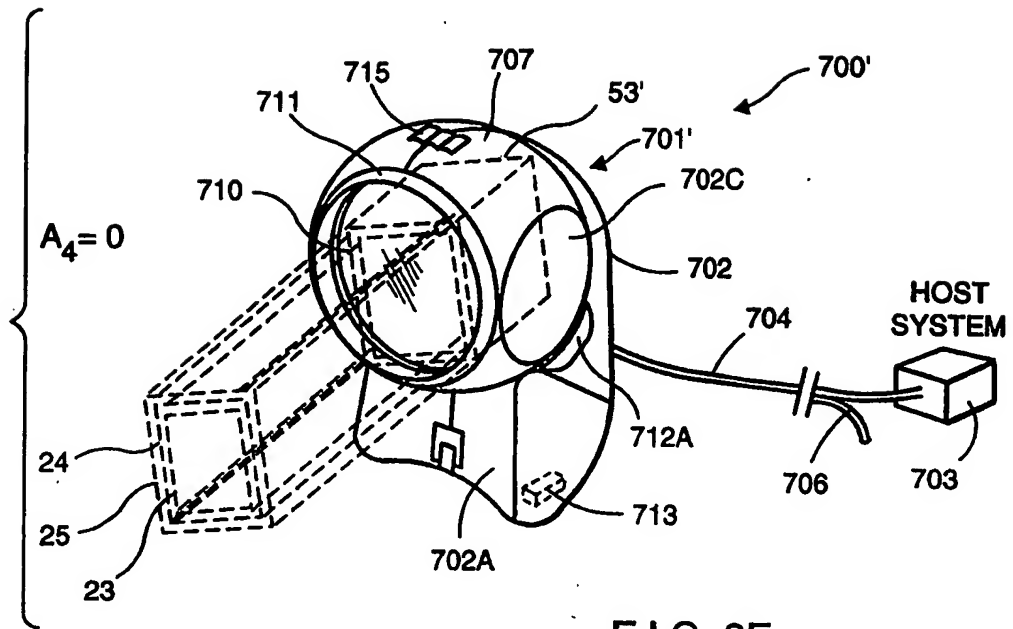


FIG. 8F

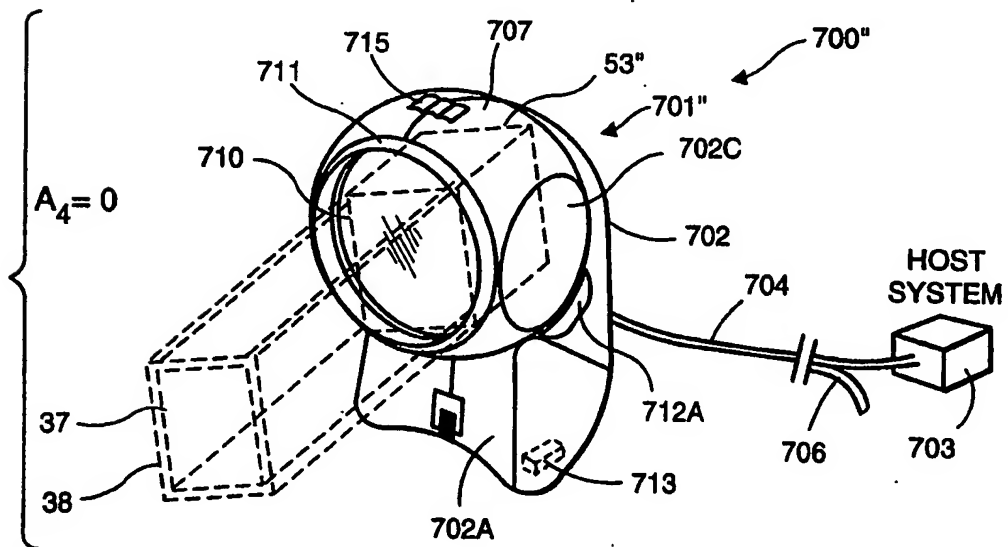


FIG. 8G

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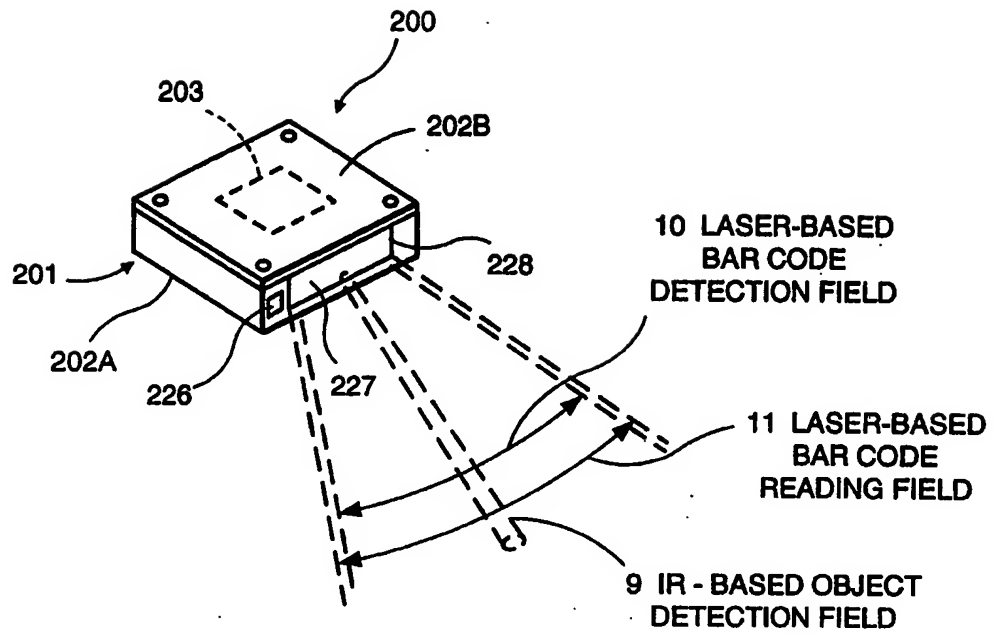


FIG. 9A

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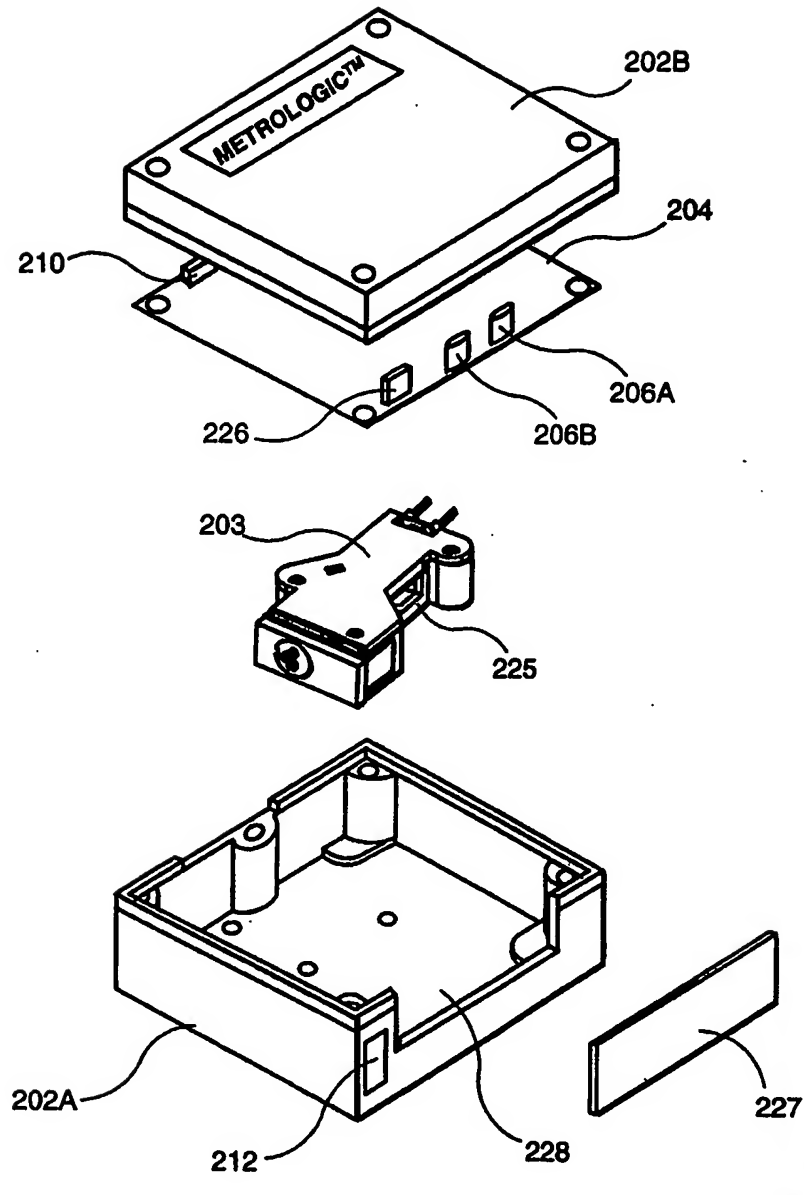


FIG. 9B

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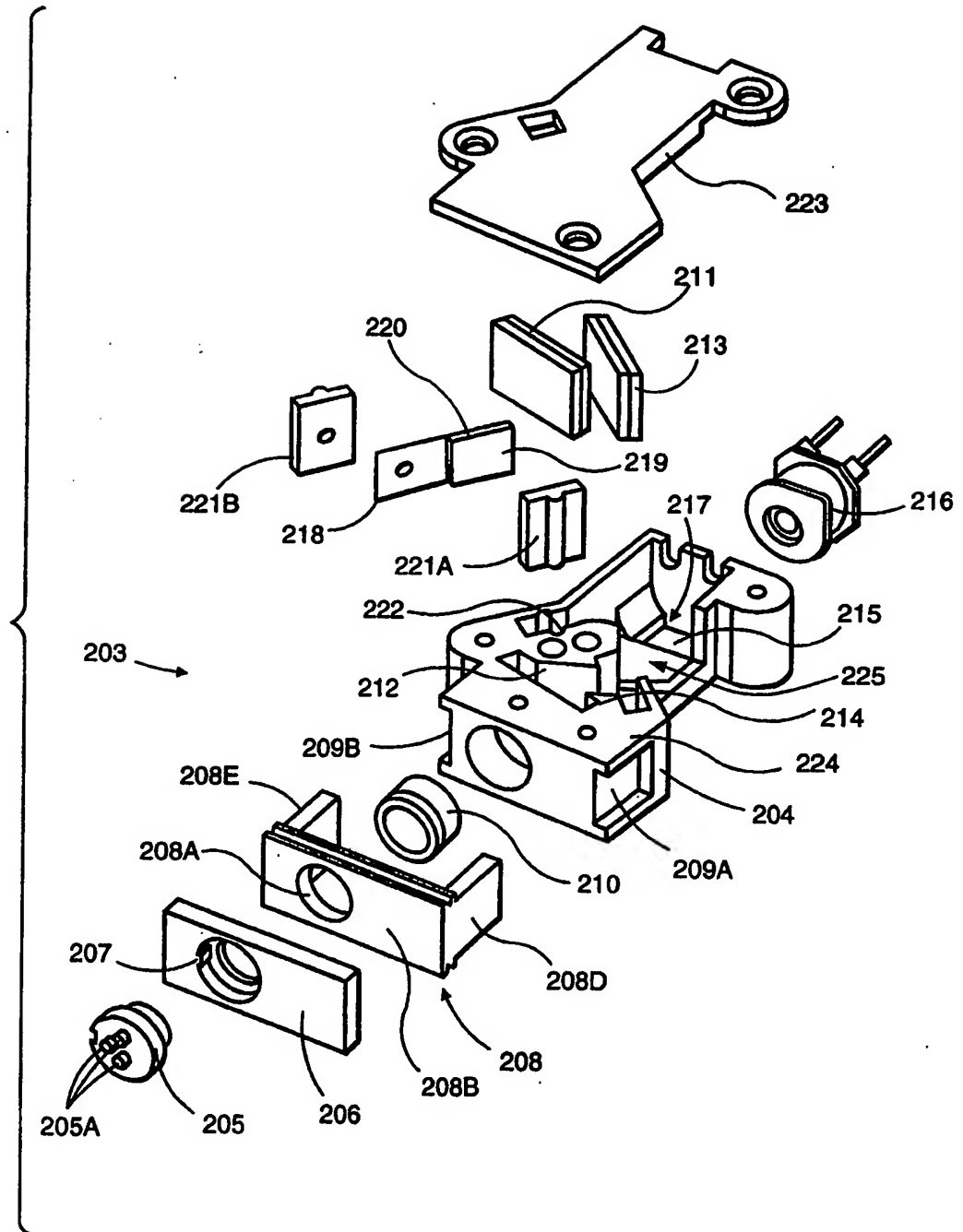


FIG. 9C

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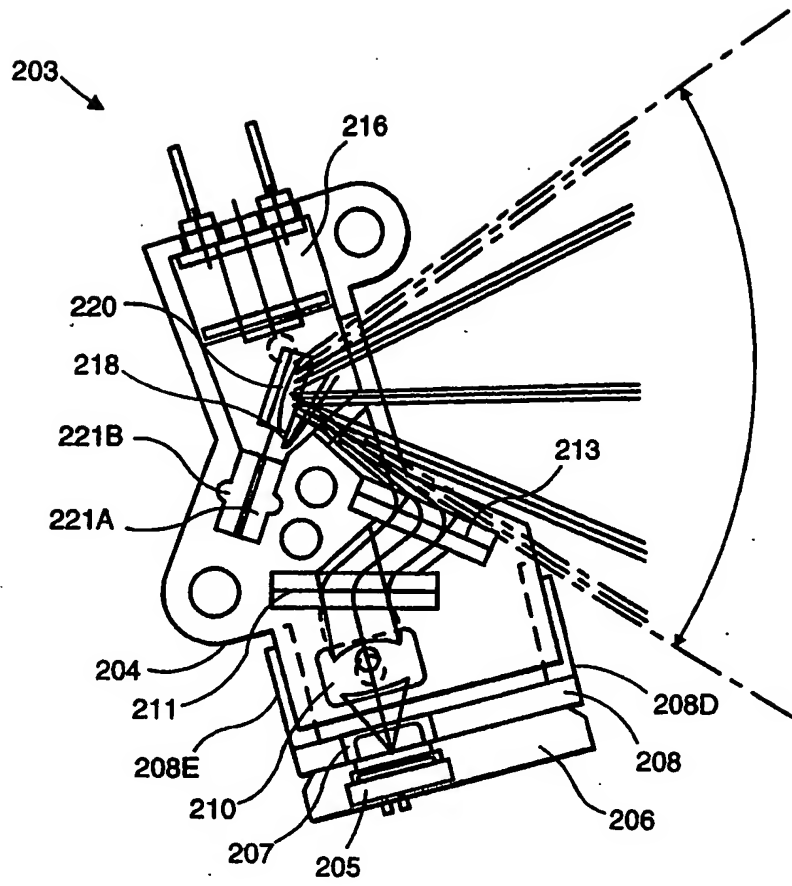


FIG. 9D

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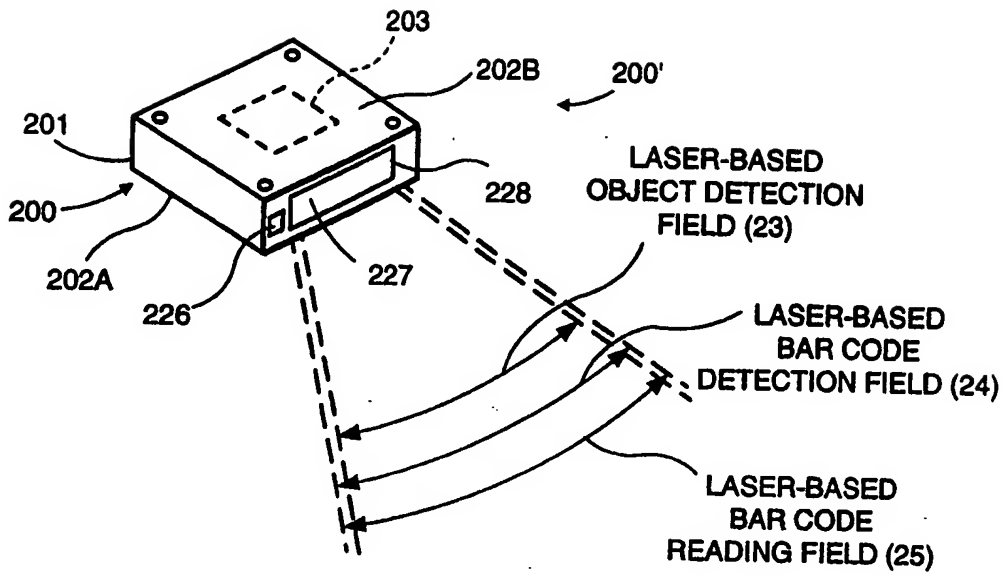


FIG. 9E

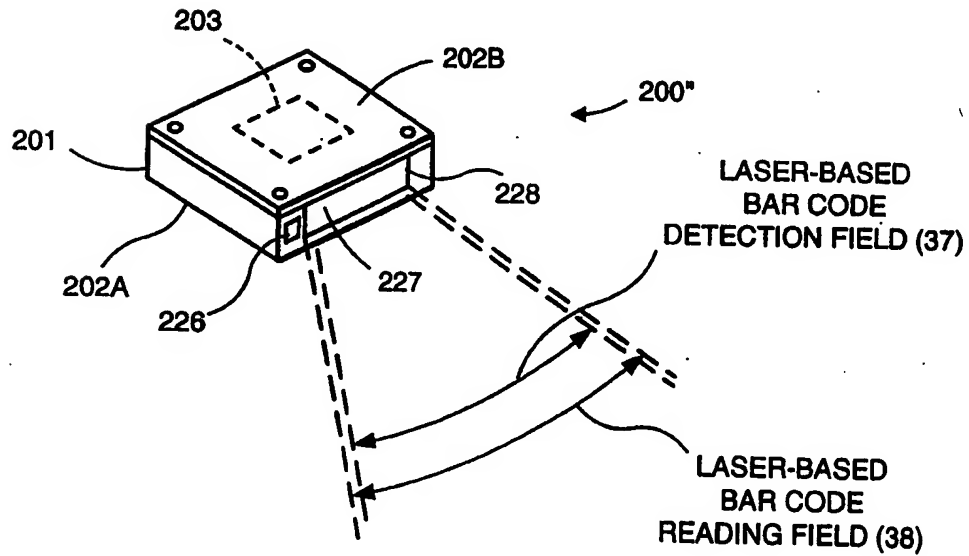


FIG. 9F

FIG. 10A

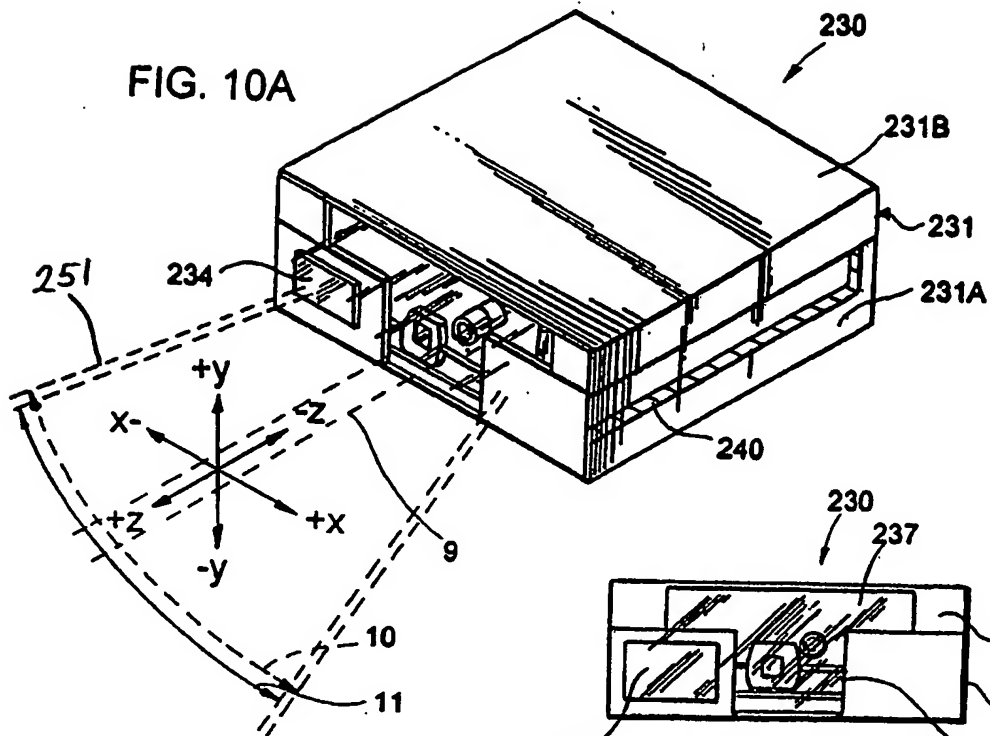


FIG. 10B

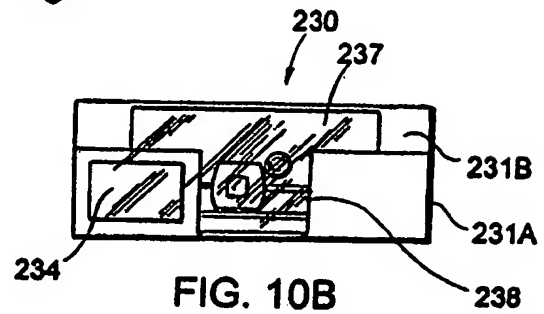


FIG. 10C

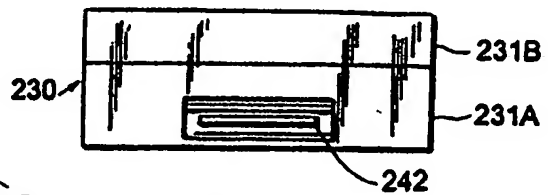
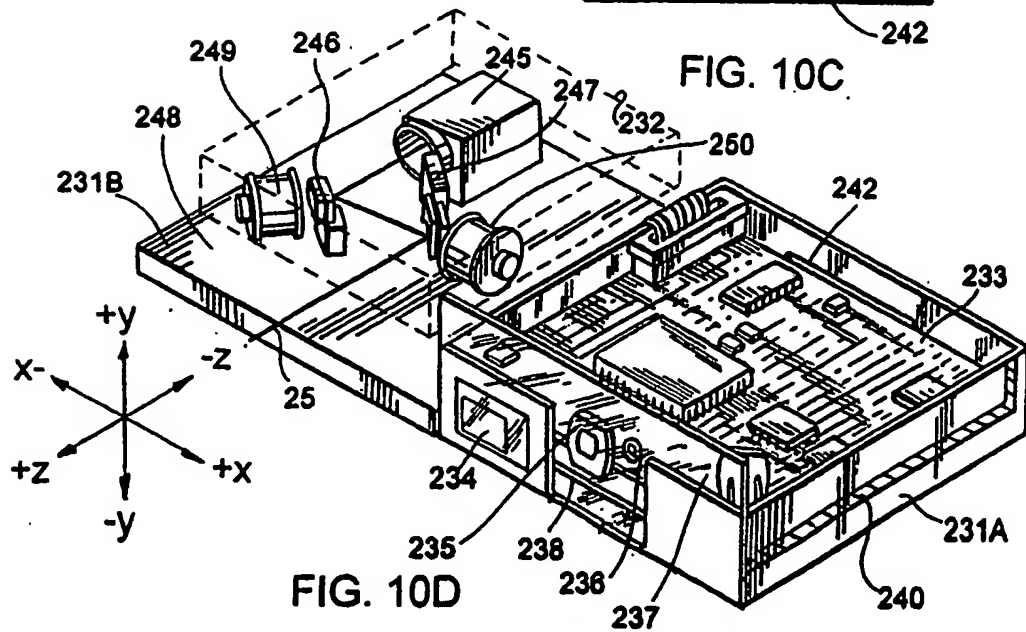


FIG. 10D



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FIG. 10E

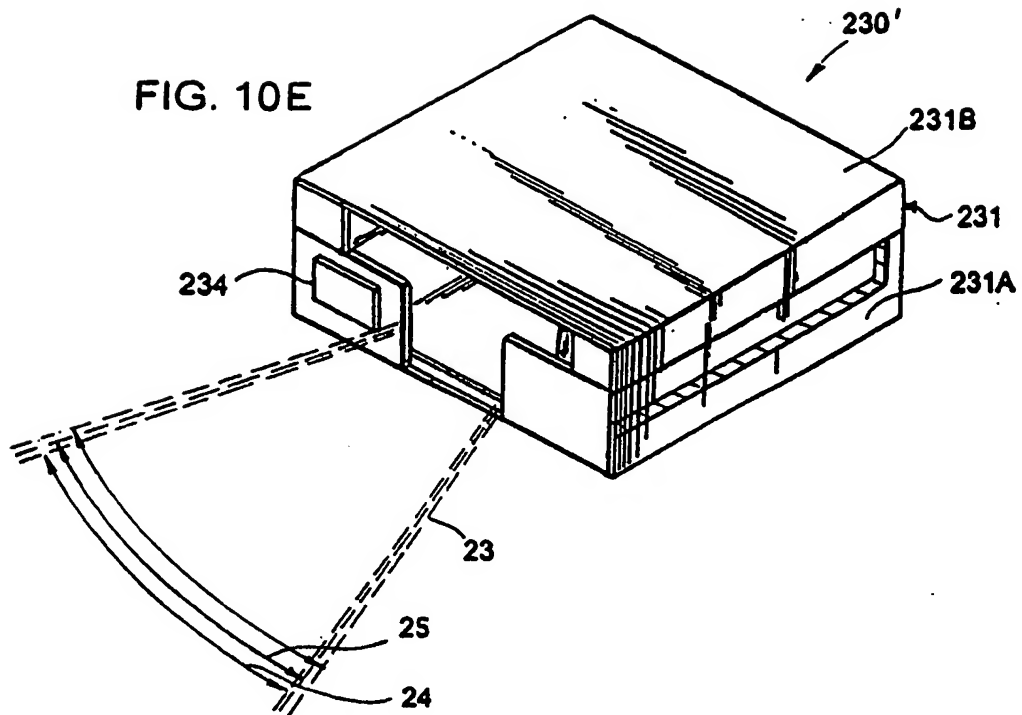
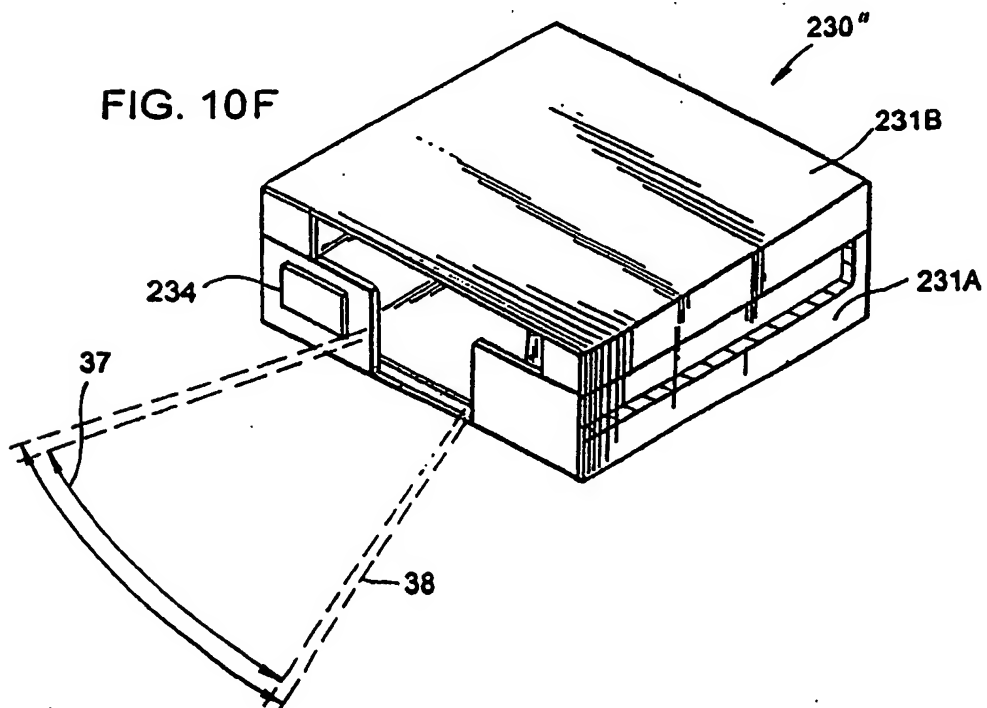


FIG. 10F



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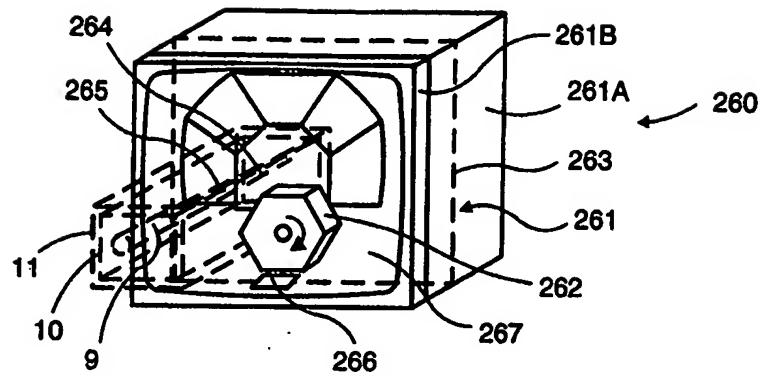


FIG. 11A

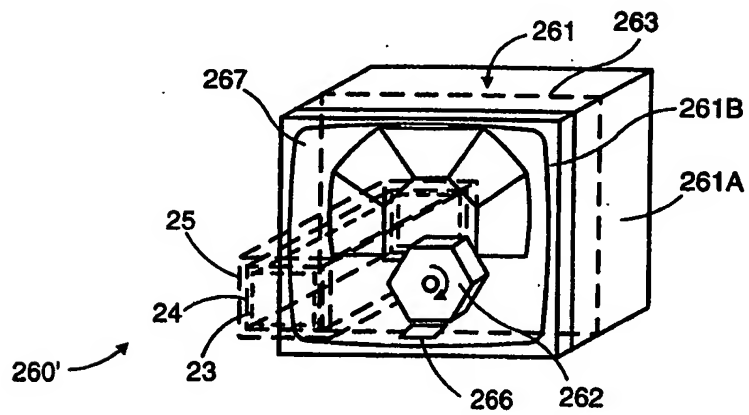


FIG. 11B

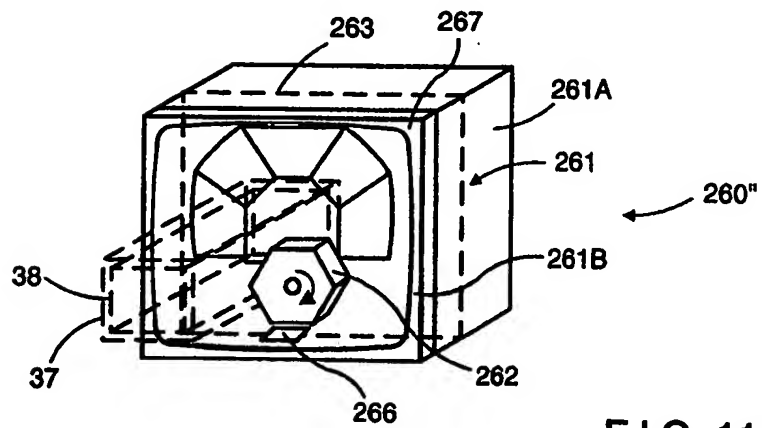


FIG. 11C

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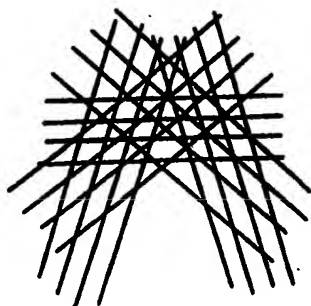


FIG. 12A

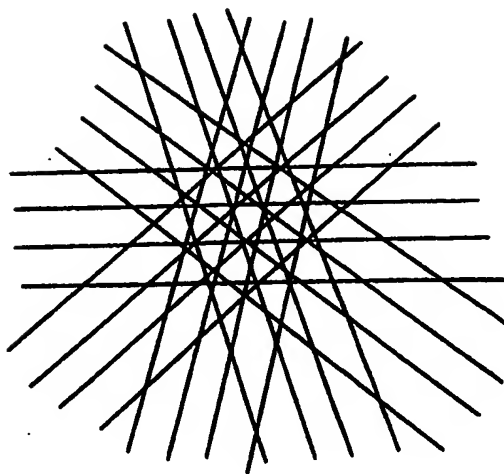
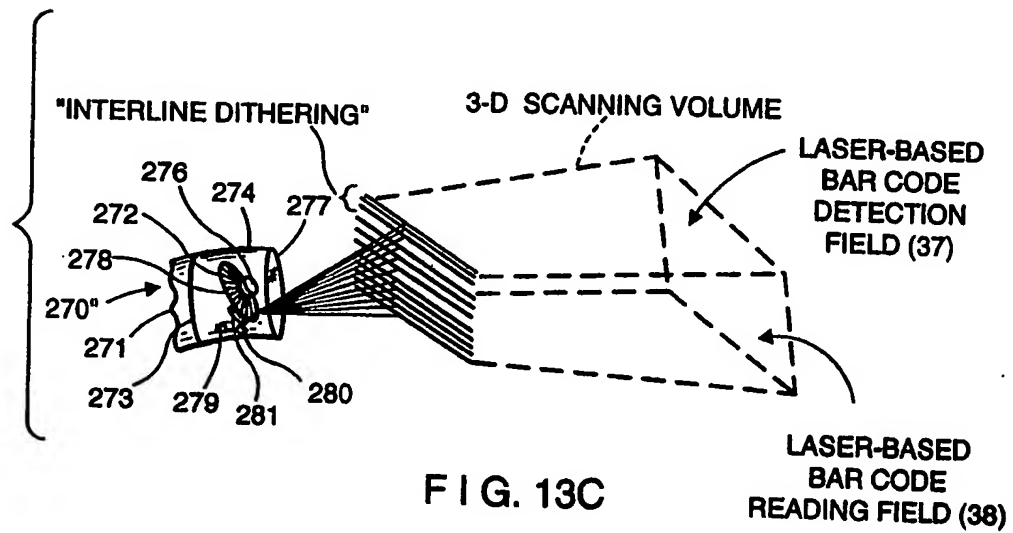
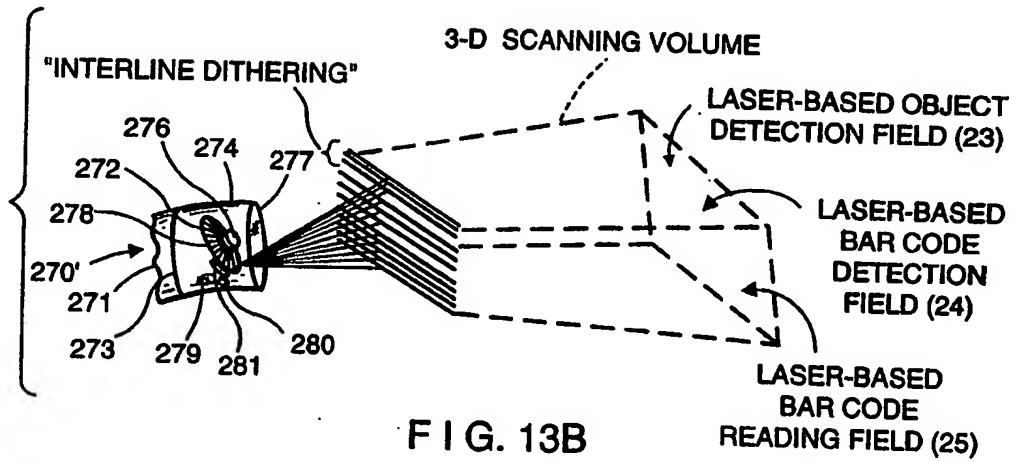
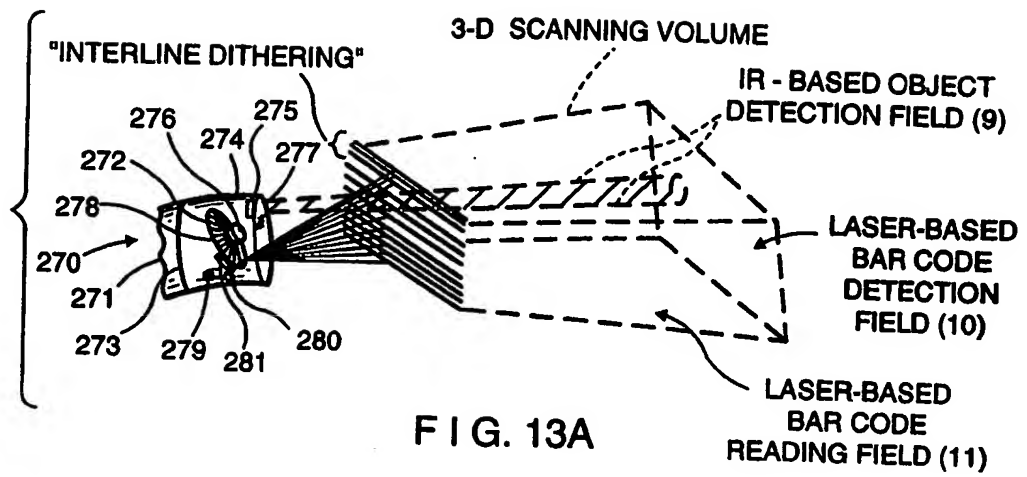


FIG. 12B

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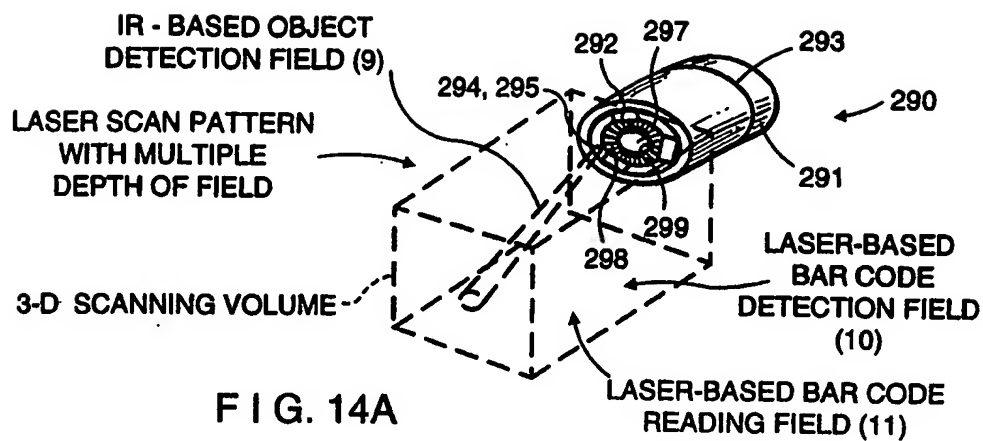


FIG. 14A

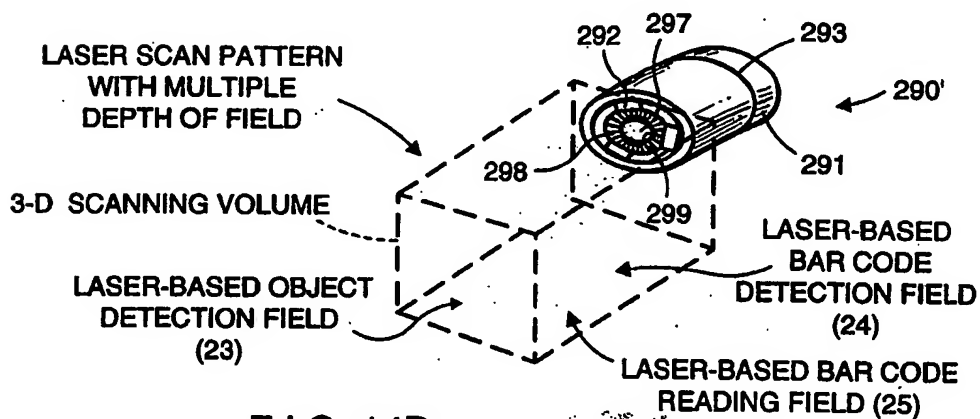


FIG. 14B

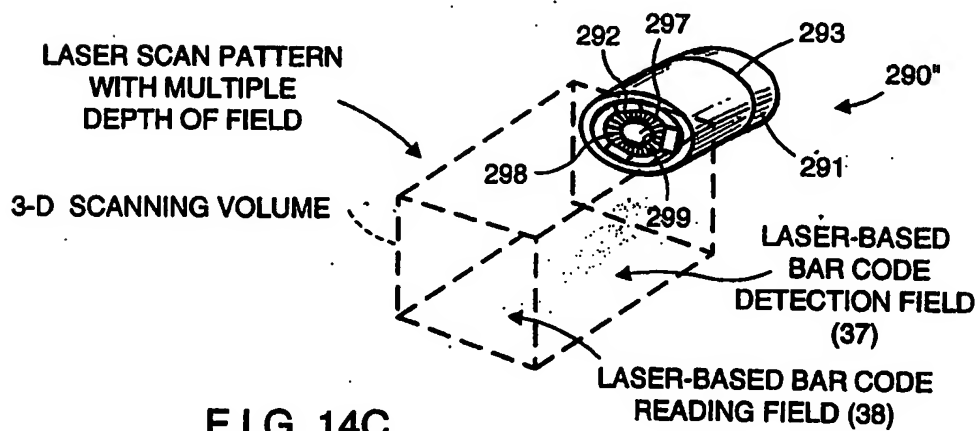


FIG. 14C

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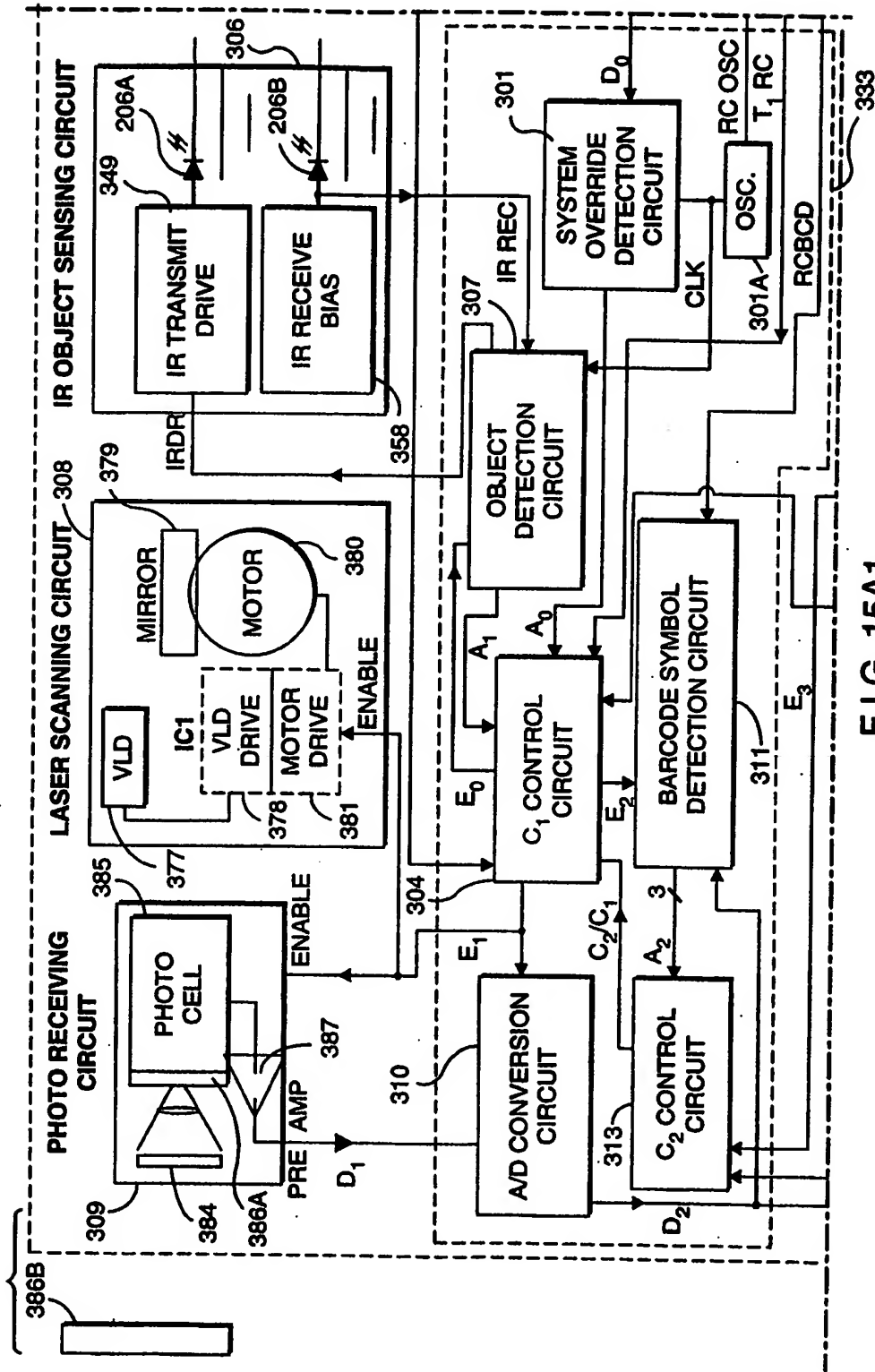


FIG. 15A1

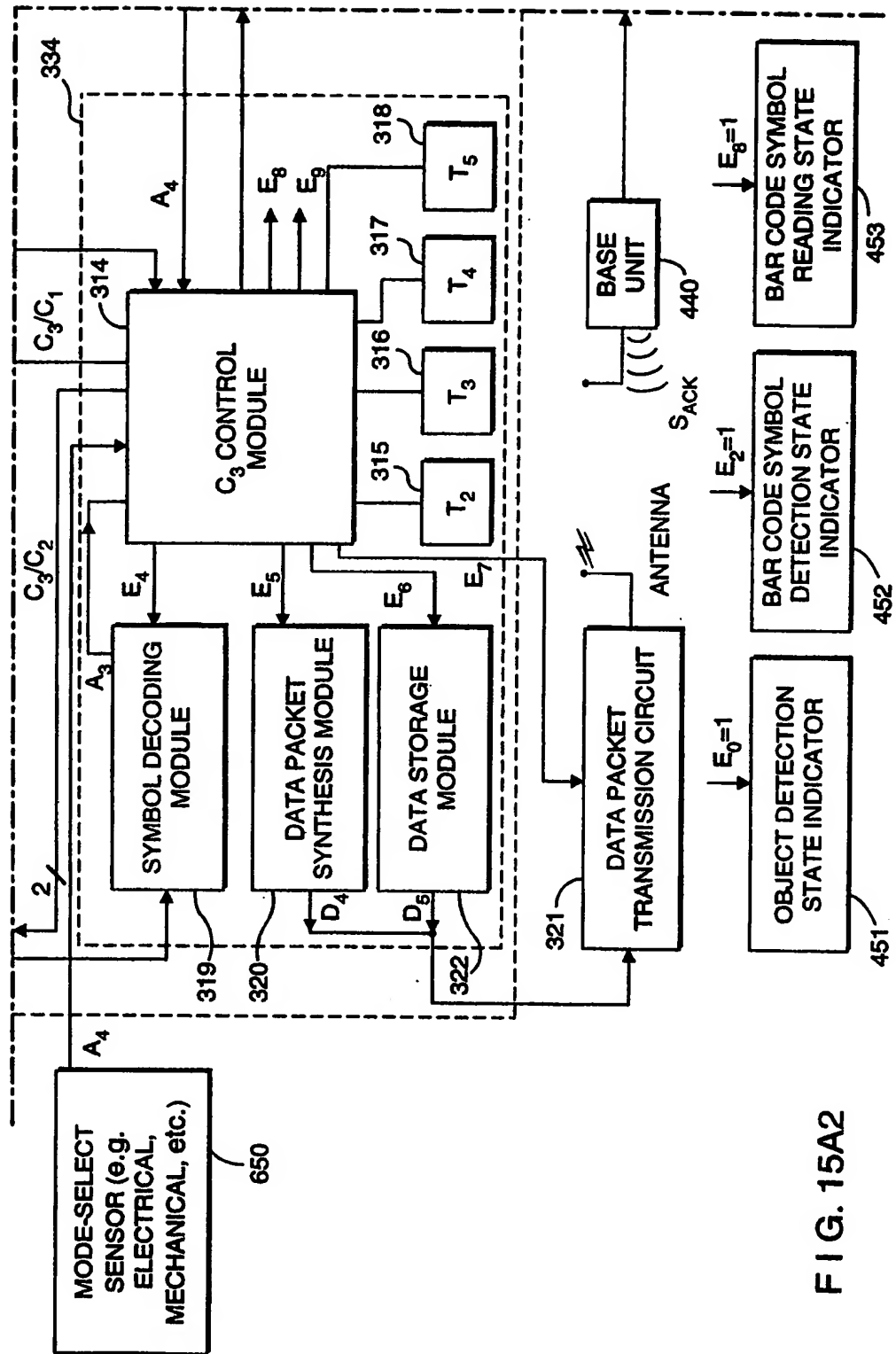


FIG. 15A2

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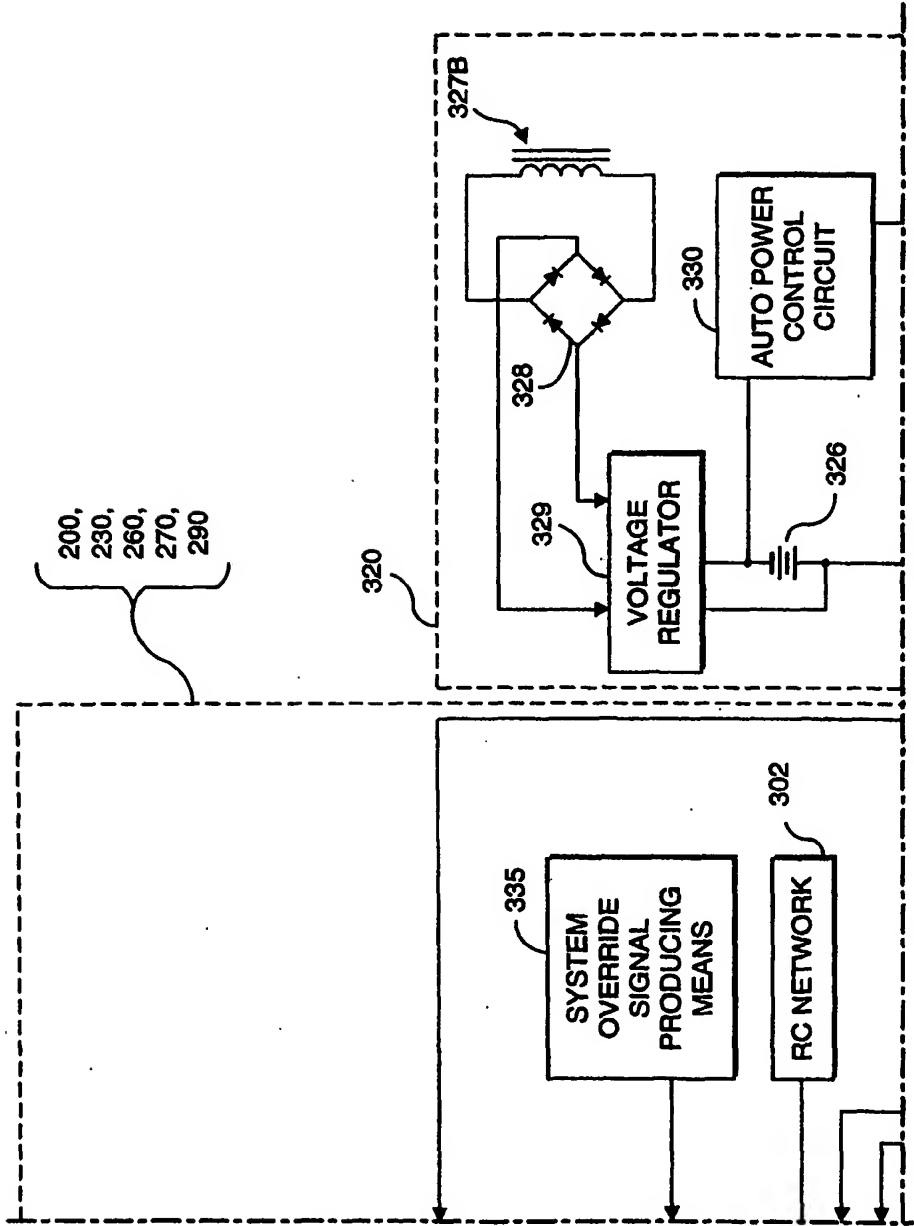
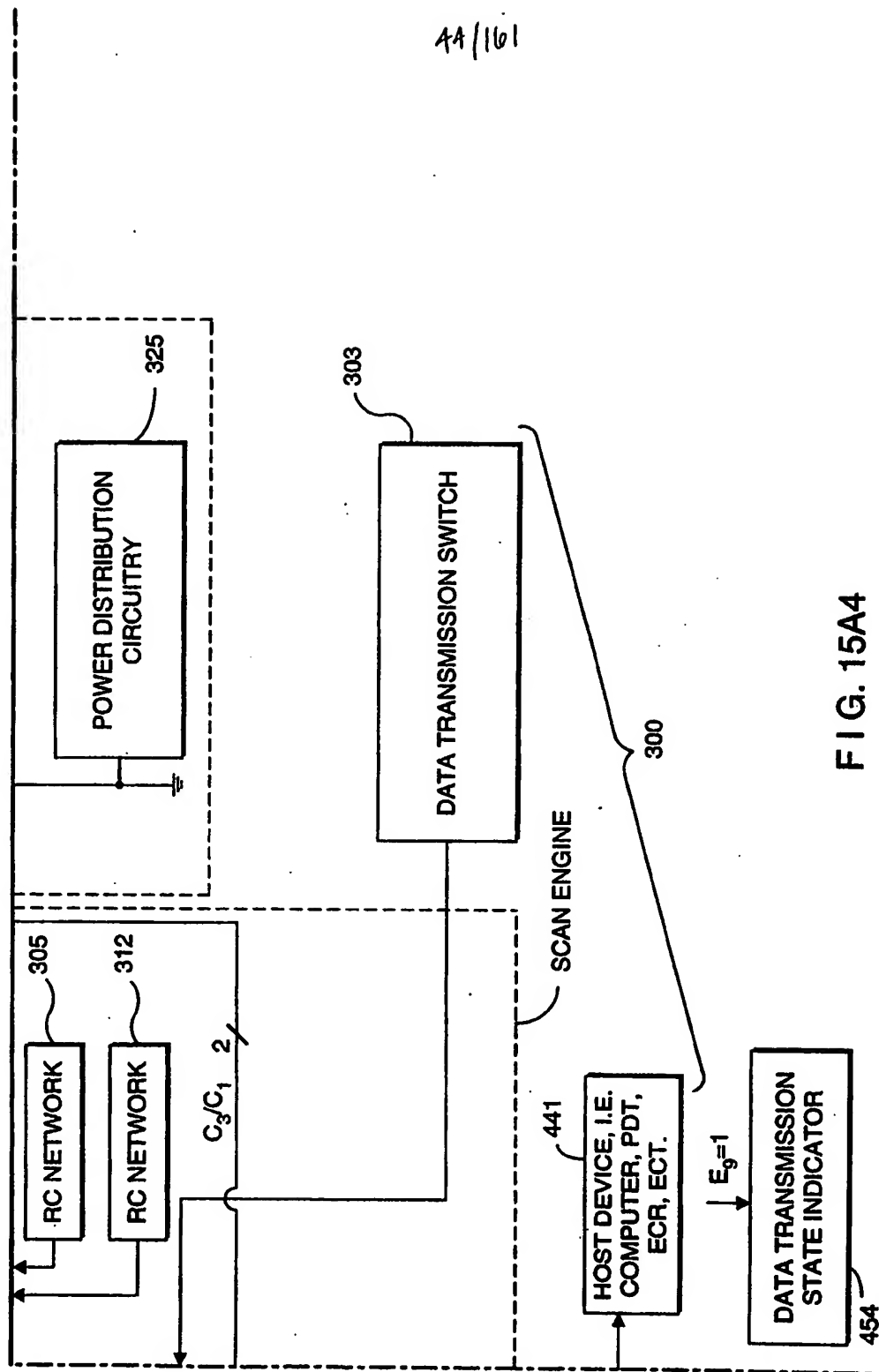


FIG. 15A3

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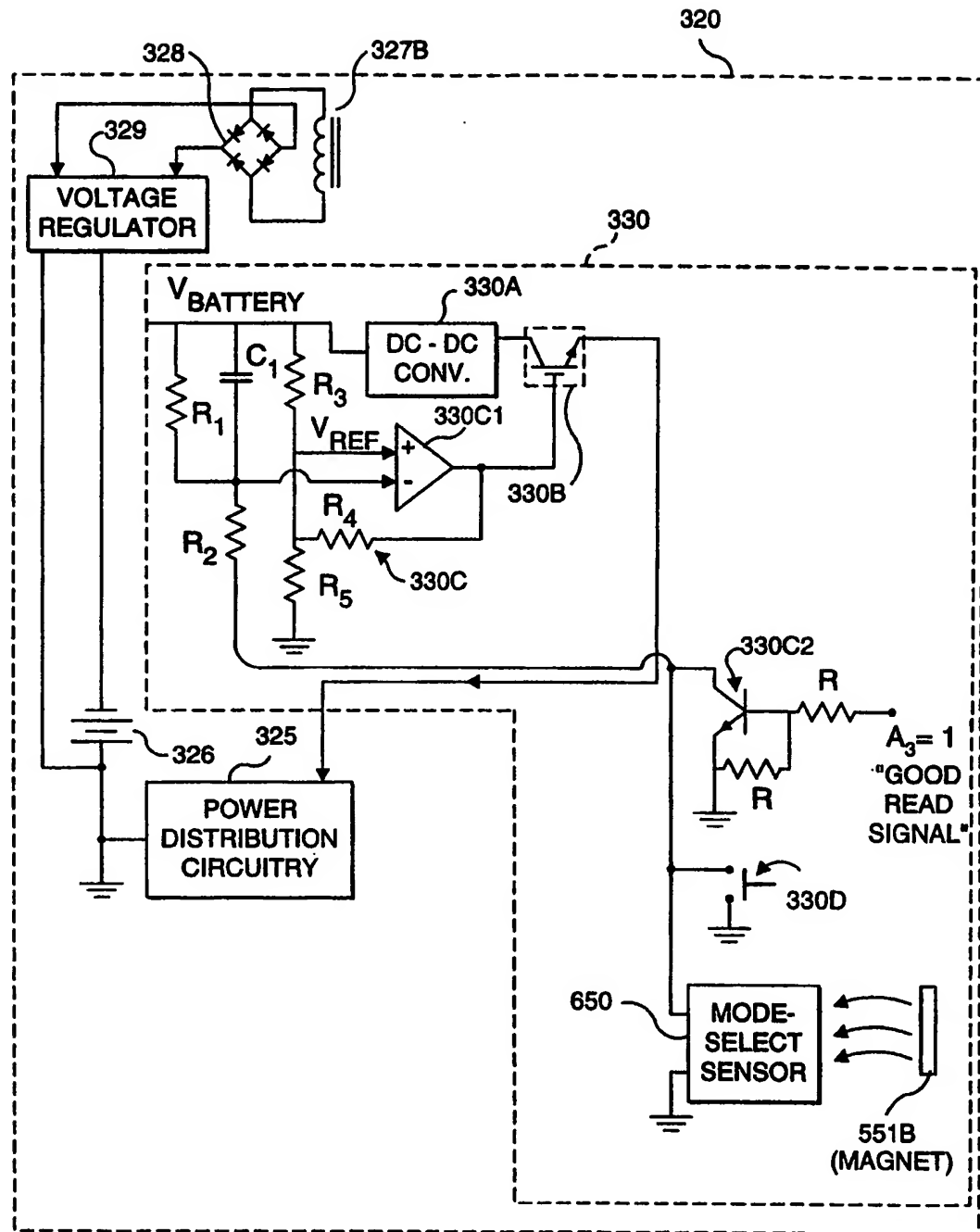


FIG. 15B1

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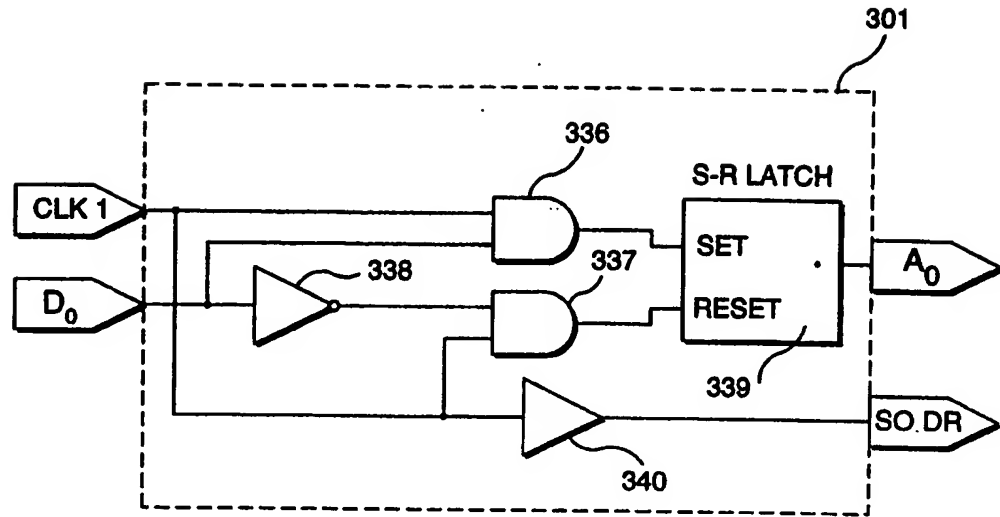


FIG. 15B2

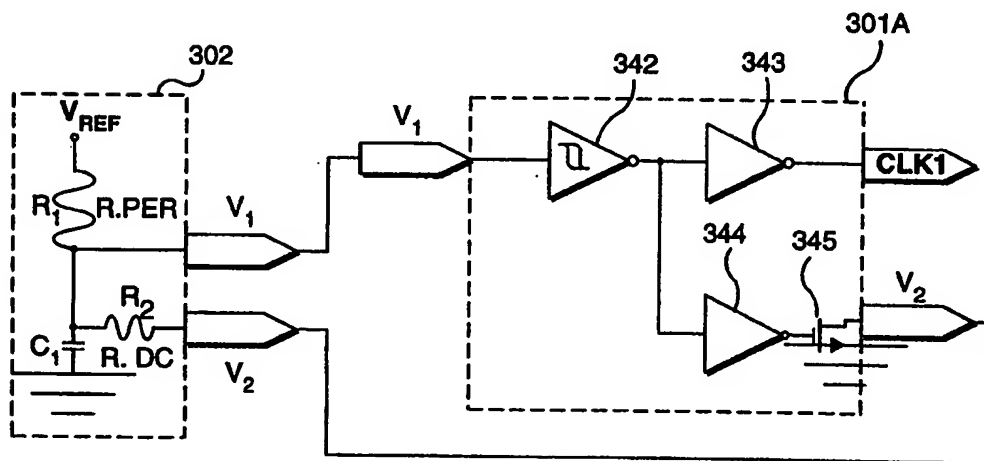


FIG. 15C

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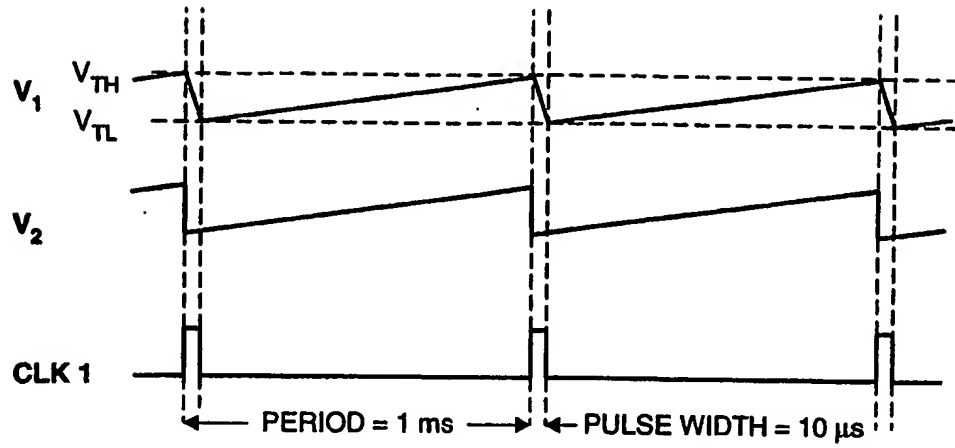


FIG. 15D

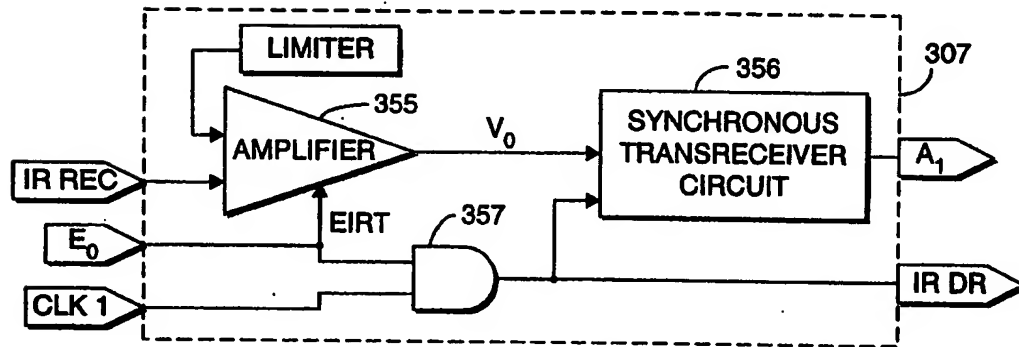


FIG. 15E

FIG. 15F

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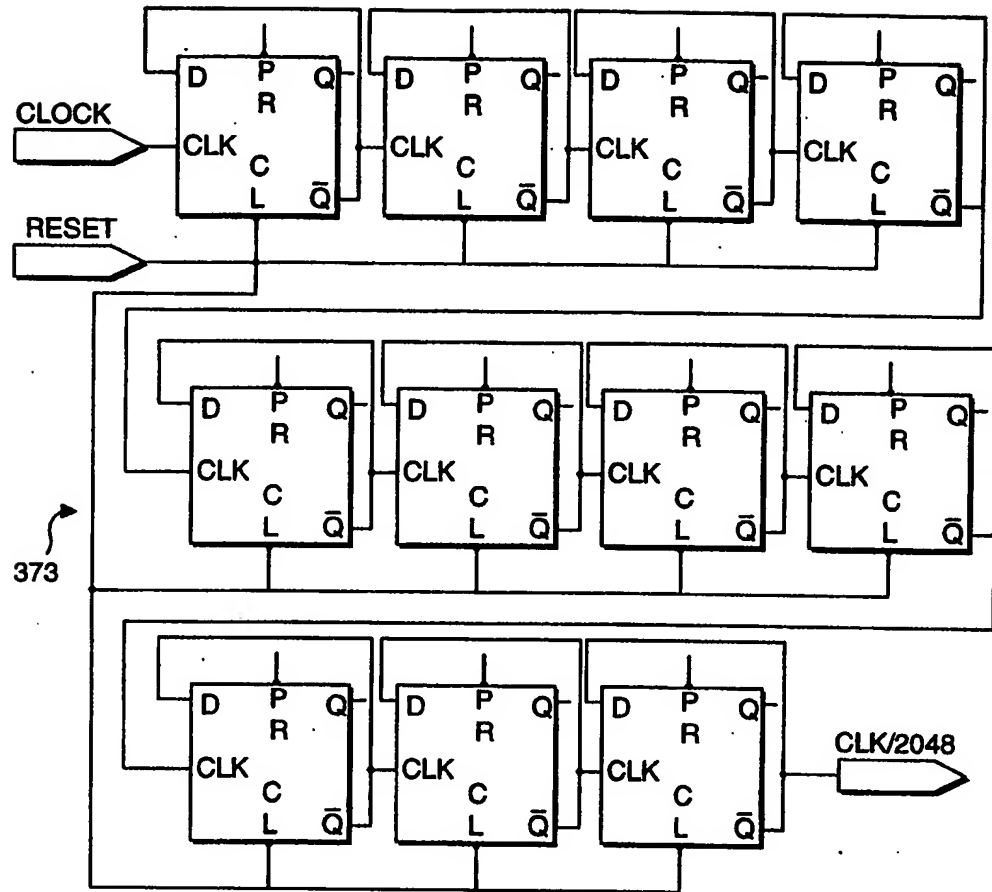


FIG. 15G

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$$\left. \begin{aligned} E_0 &= (B1 + A_0) (C_3 / C_{1-1}) \\ E_1 &= (C_3 / C_{1-2}) + B1 \\ E_2 &= (C_2 / C_1) (T_1) \end{aligned} \right\}$$

FIG. 15H

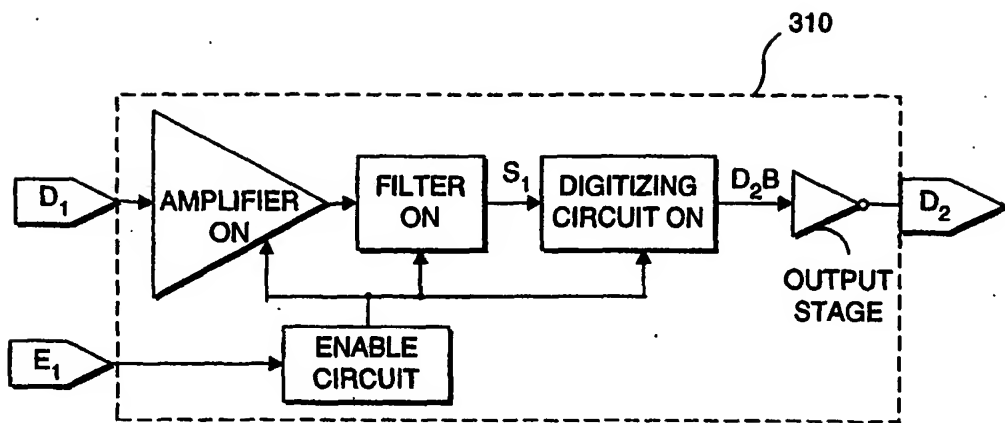


FIG. 15I

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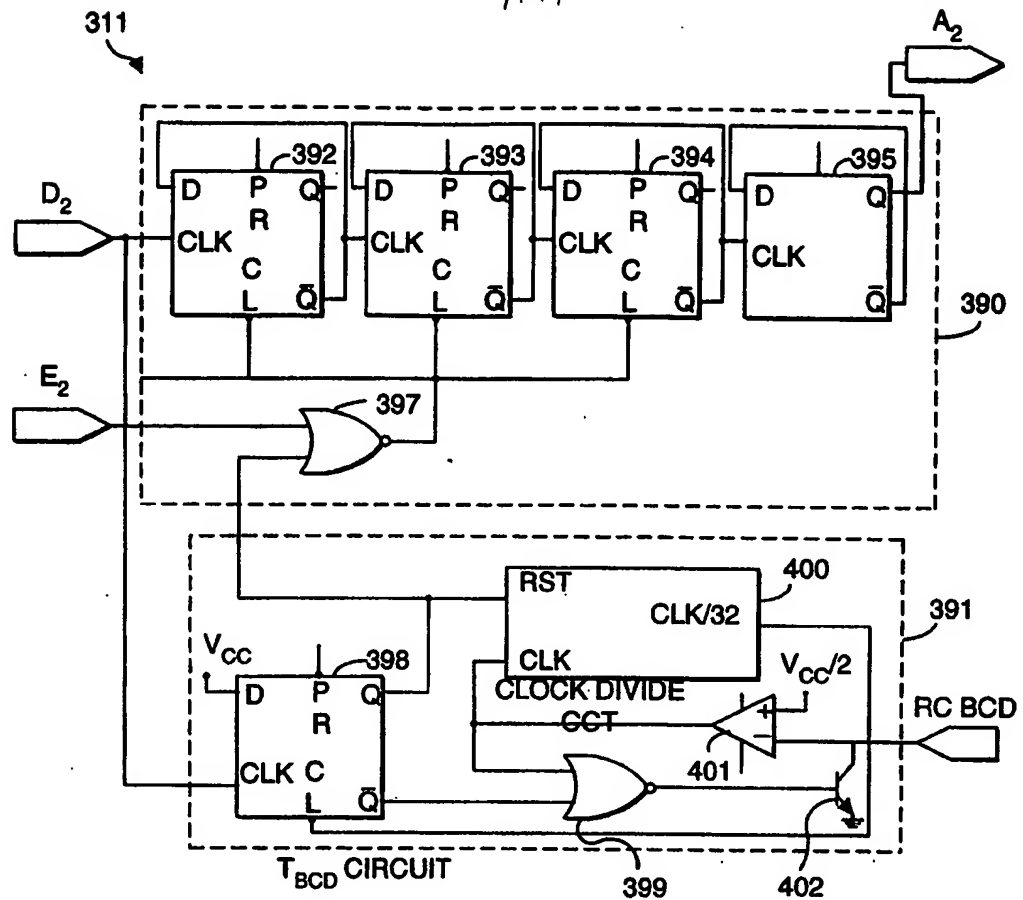


FIG. 15J

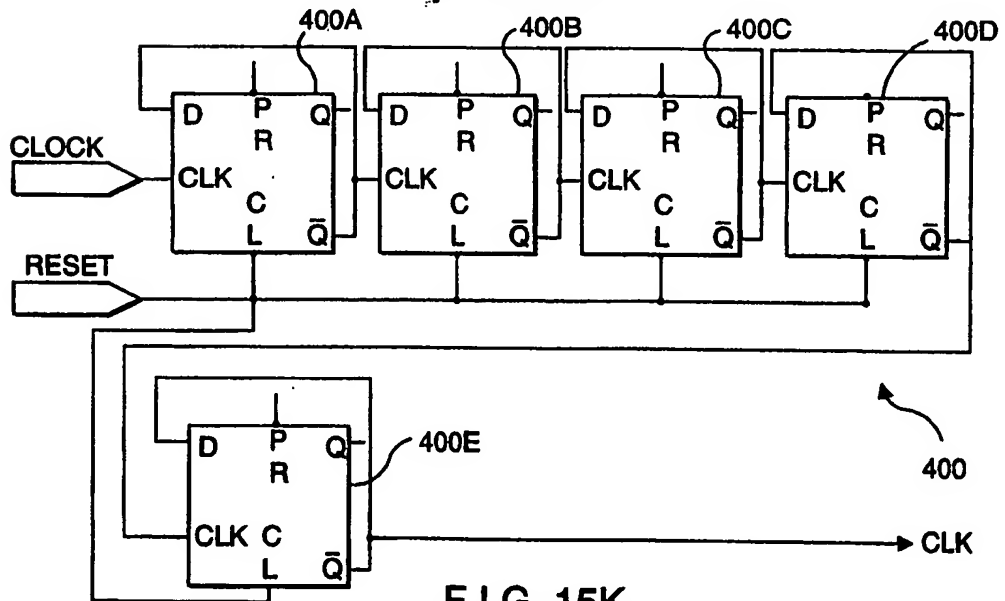


FIG. 15K

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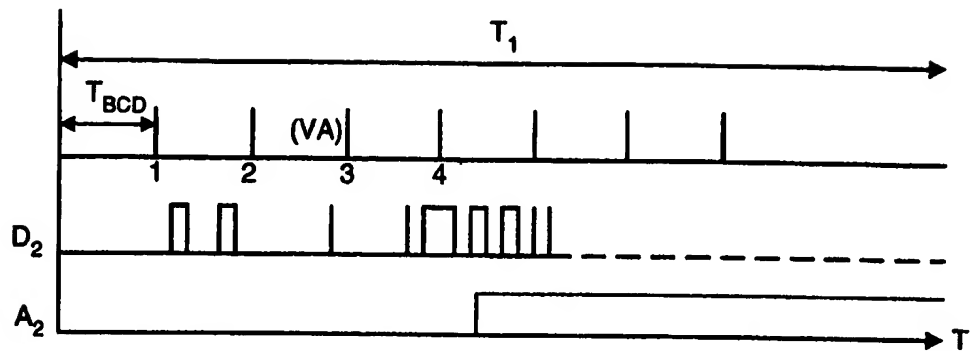


FIG. 15L

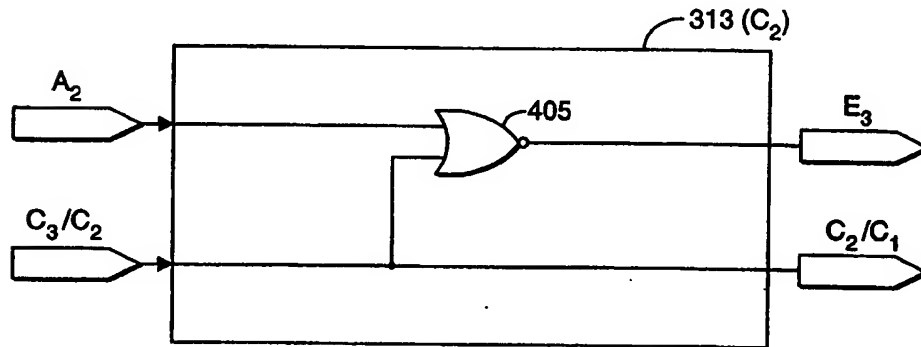


FIG. 15M

C_3/C_2	A_2	E_3	C_2/C_1
0	0	0	0
0	1	1	0
1	X	1	1

X: DON'T CARE (I.E. C_3/C_2 OVERRIDES A_2)

FIG. 15N

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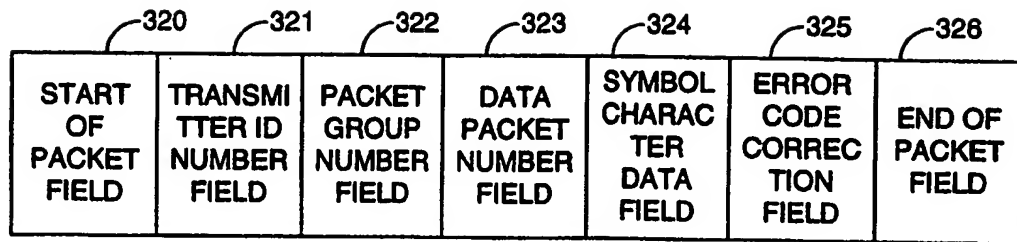


FIG. 150

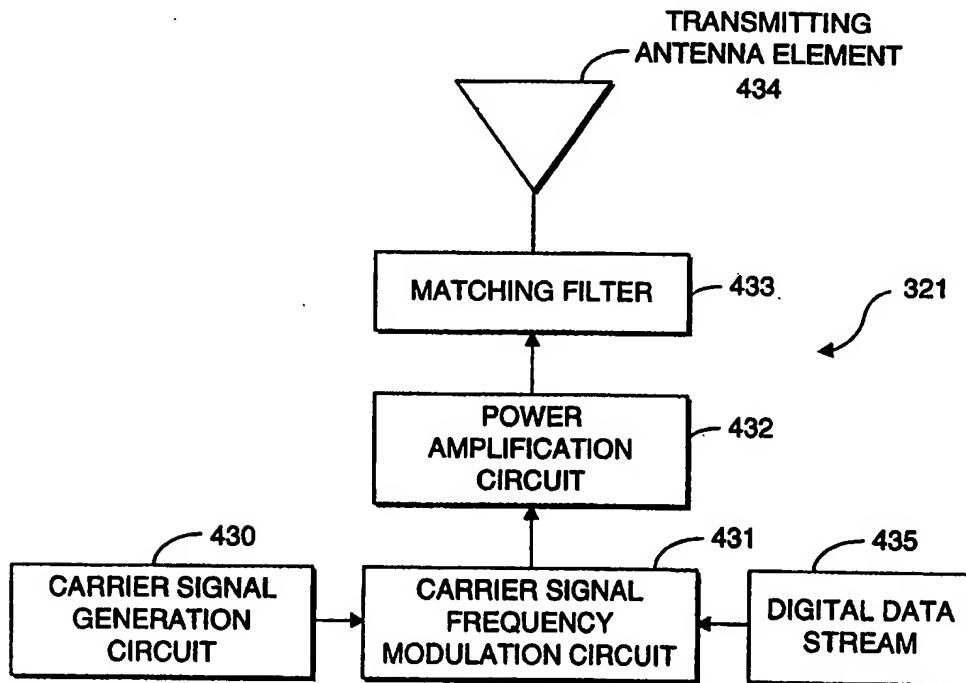


FIG. 16

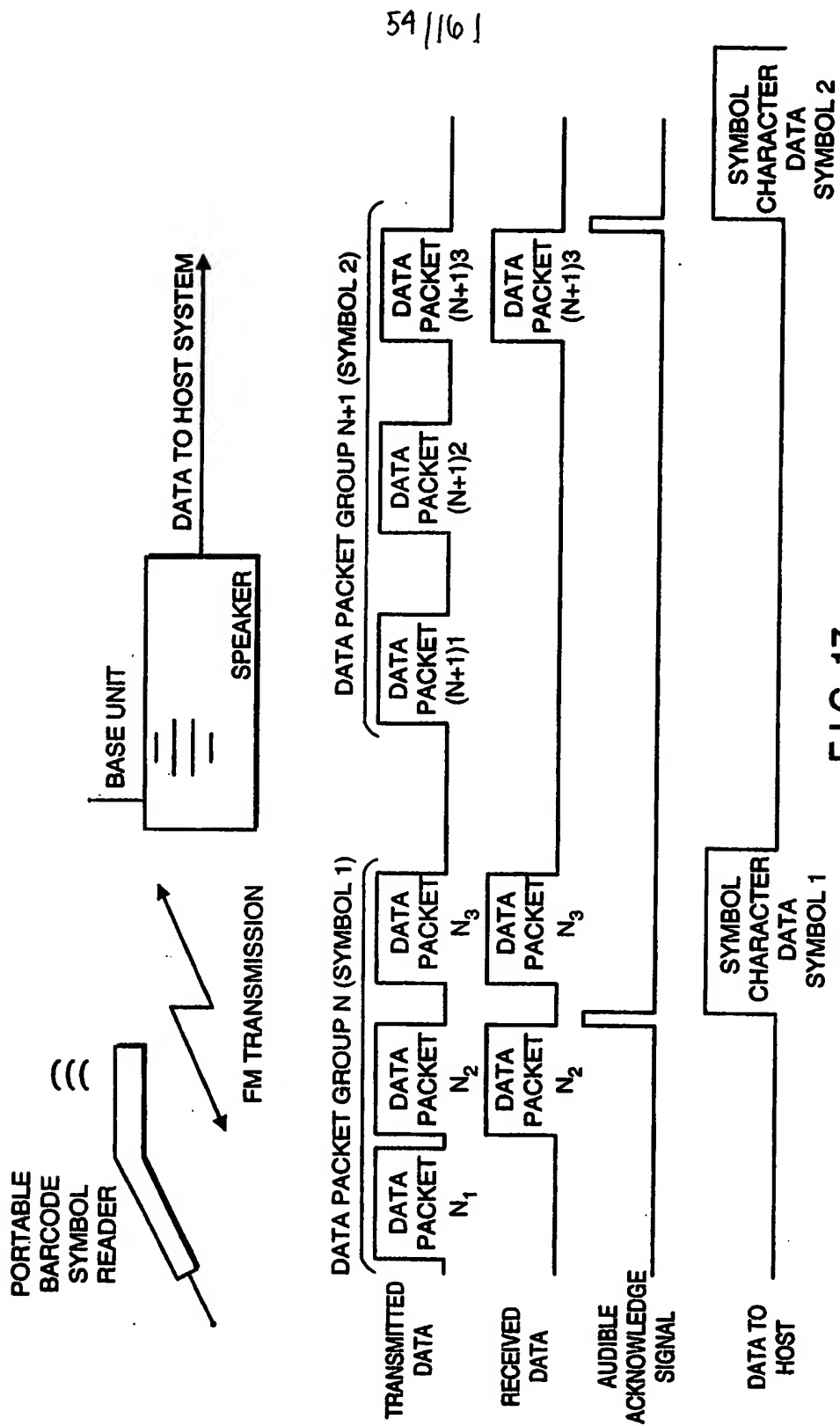


FIG. 17

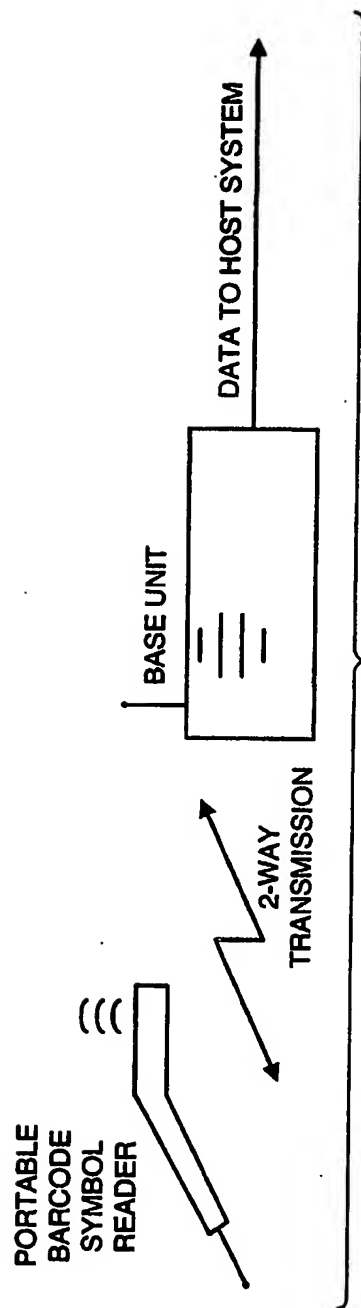


FIG. 18

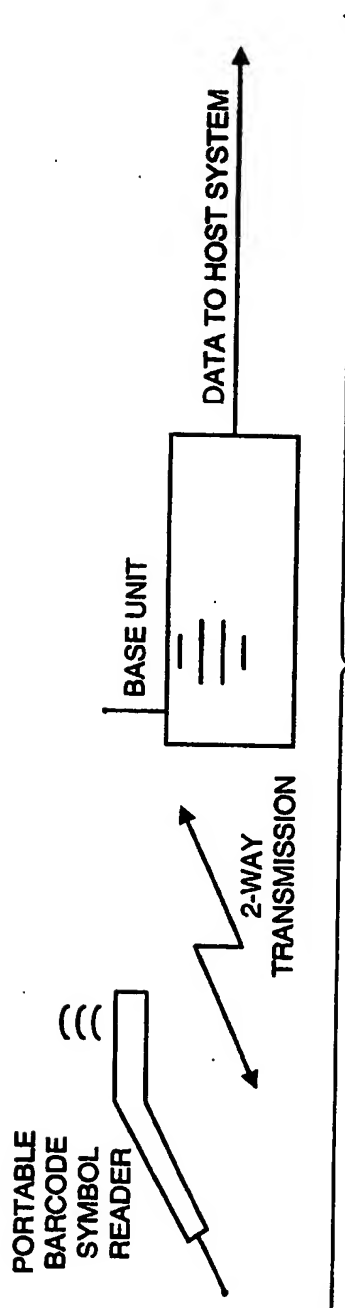


FIG. 19

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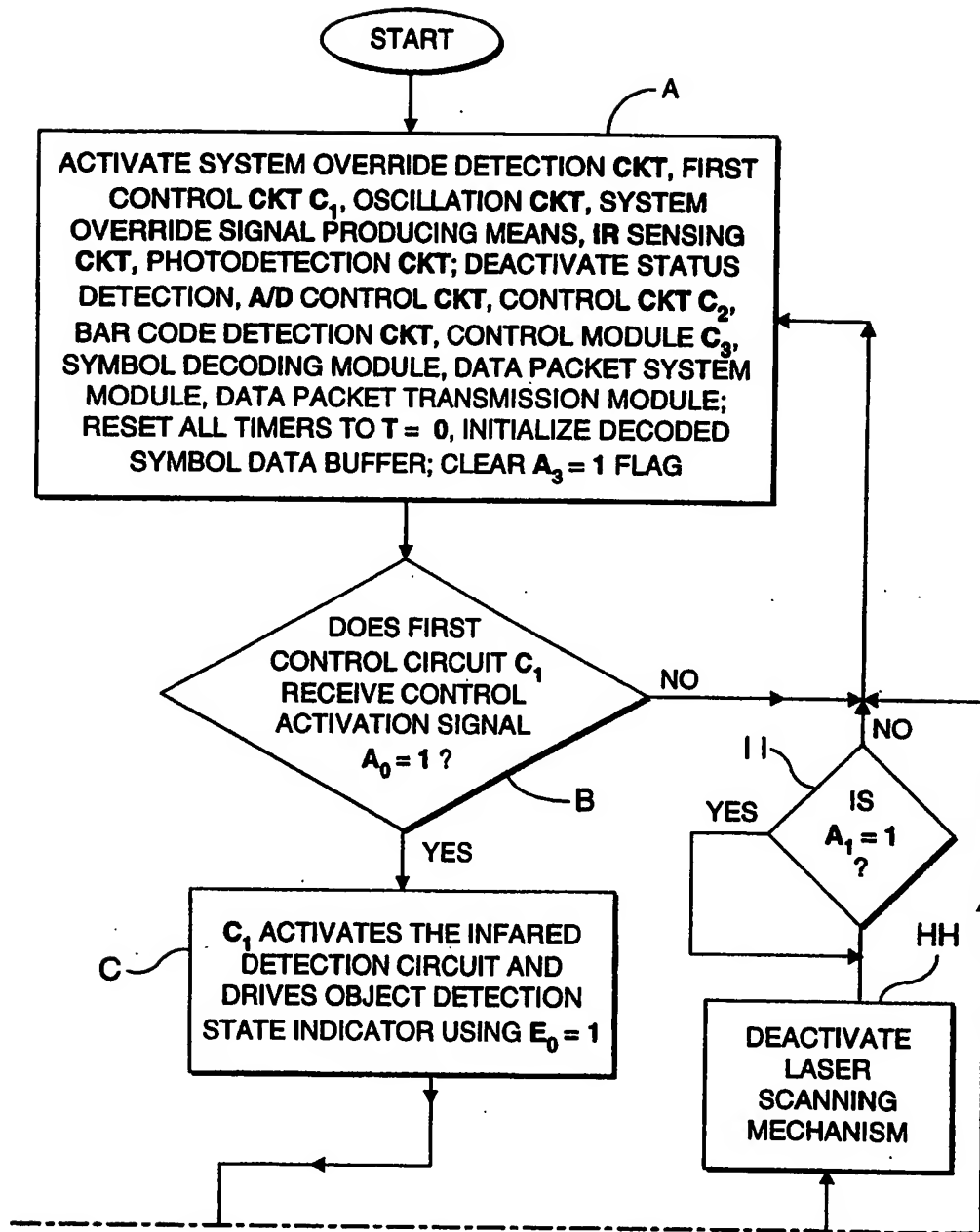


FIG. 20A1

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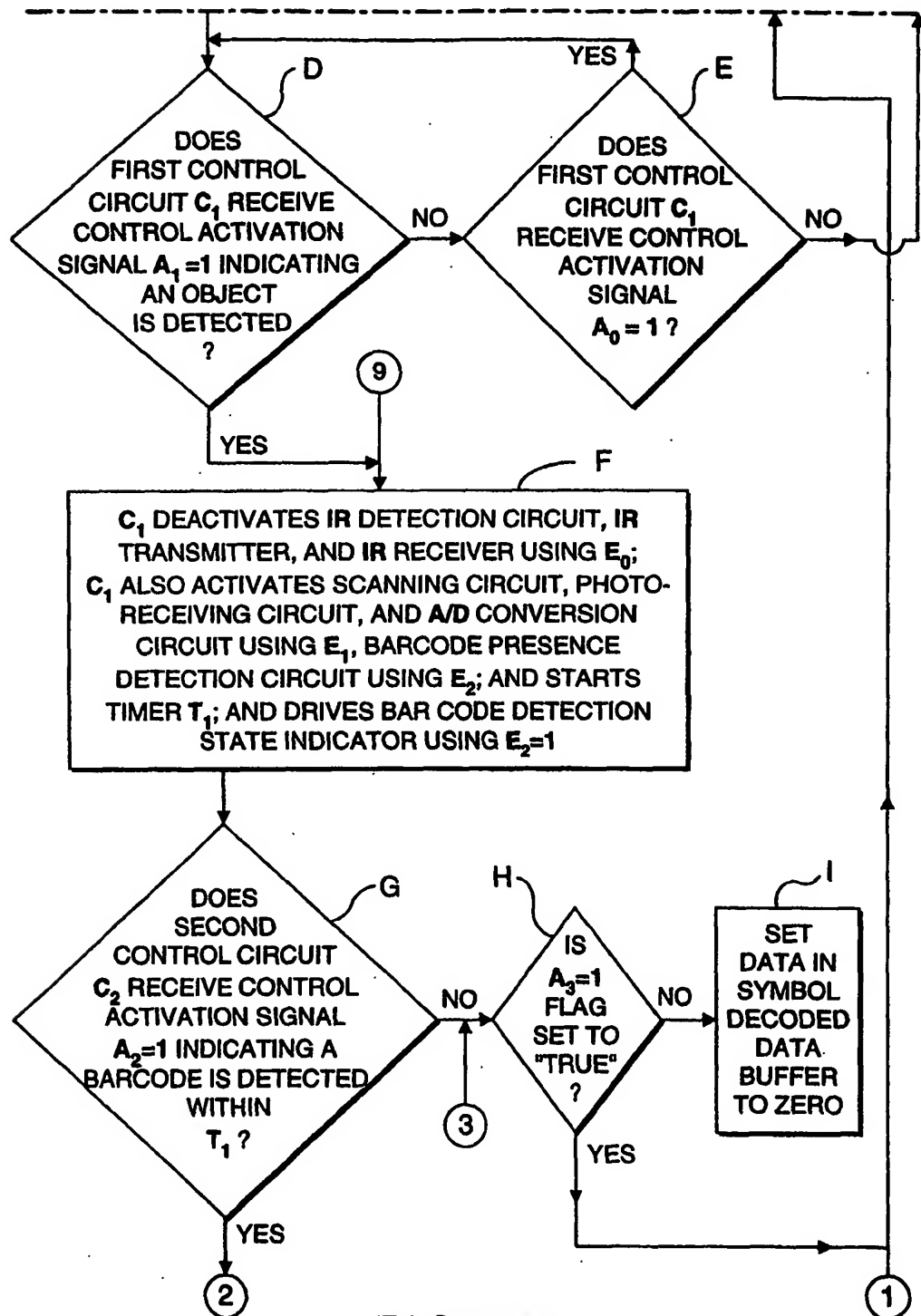


FIG. 20A2

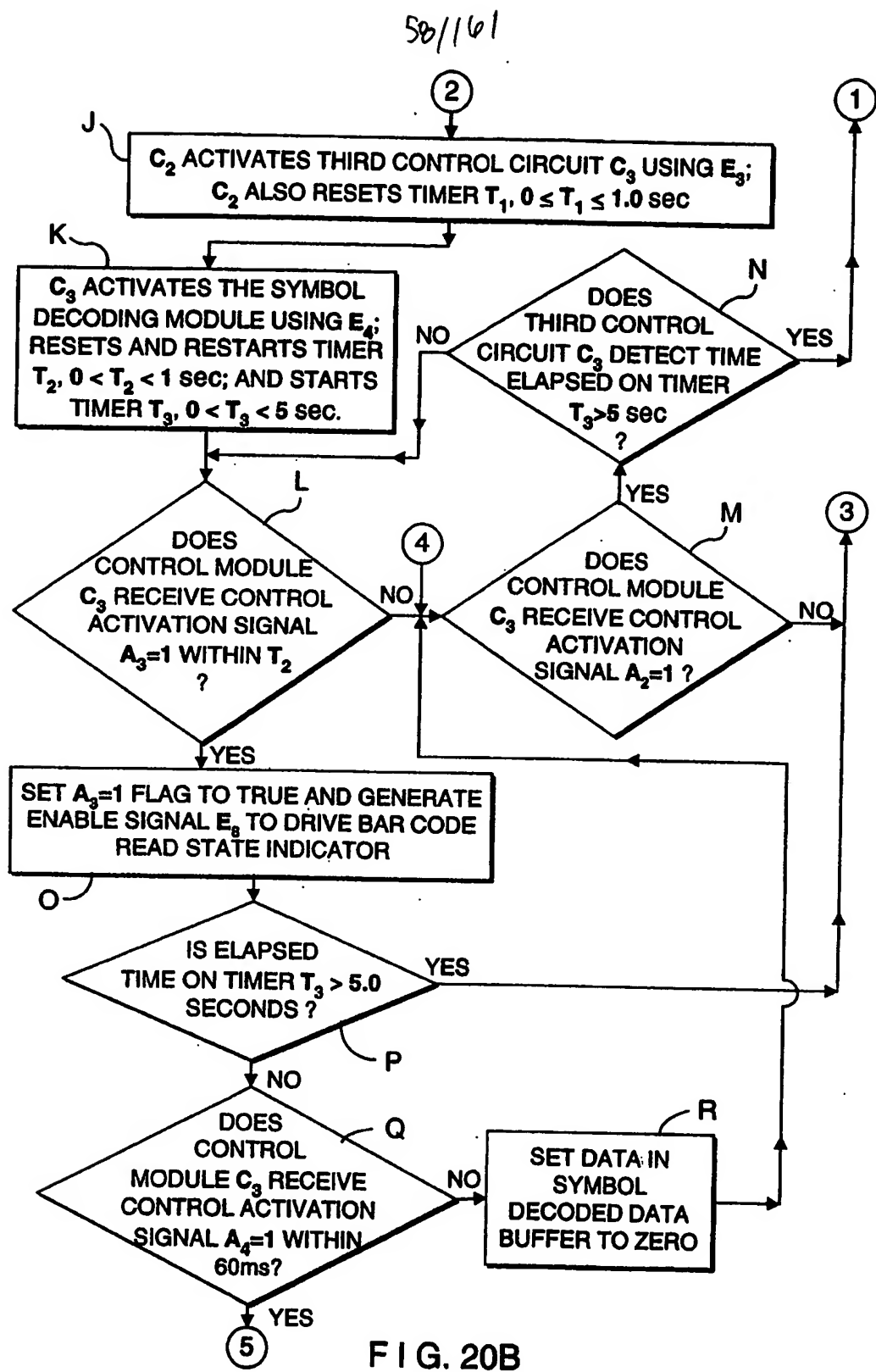


FIG. 20B

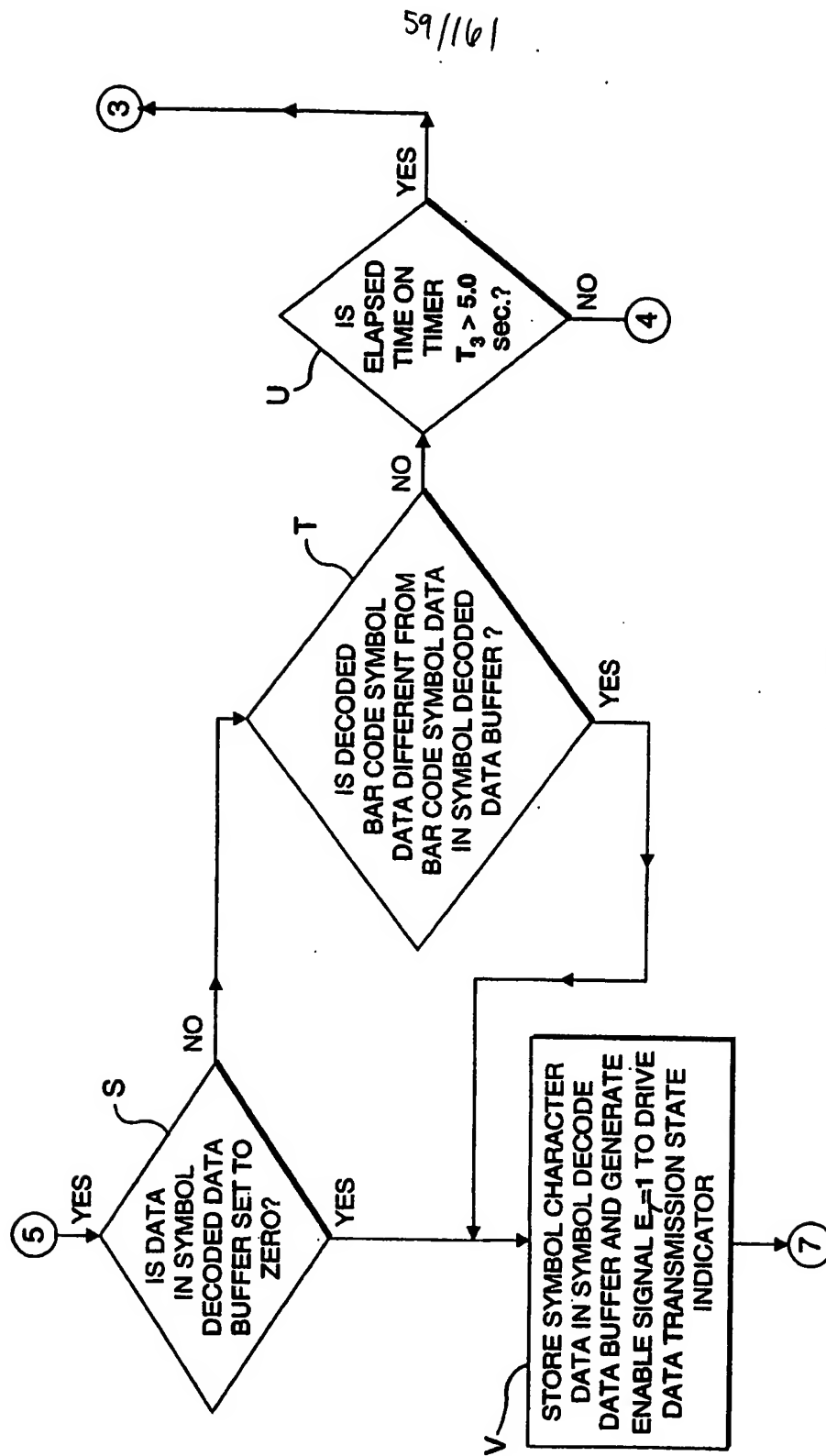


FIG. 20C

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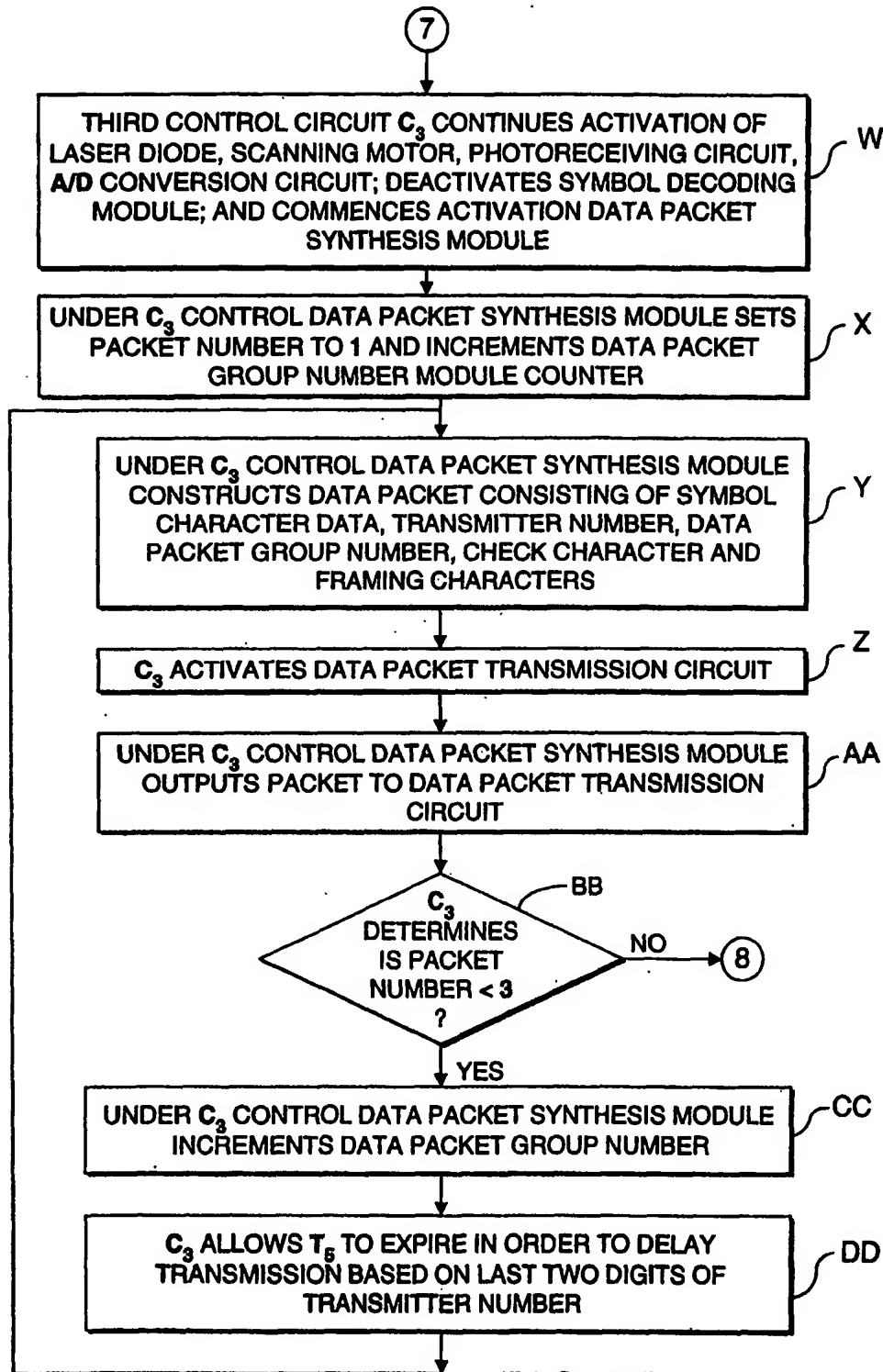


FIG. 20D

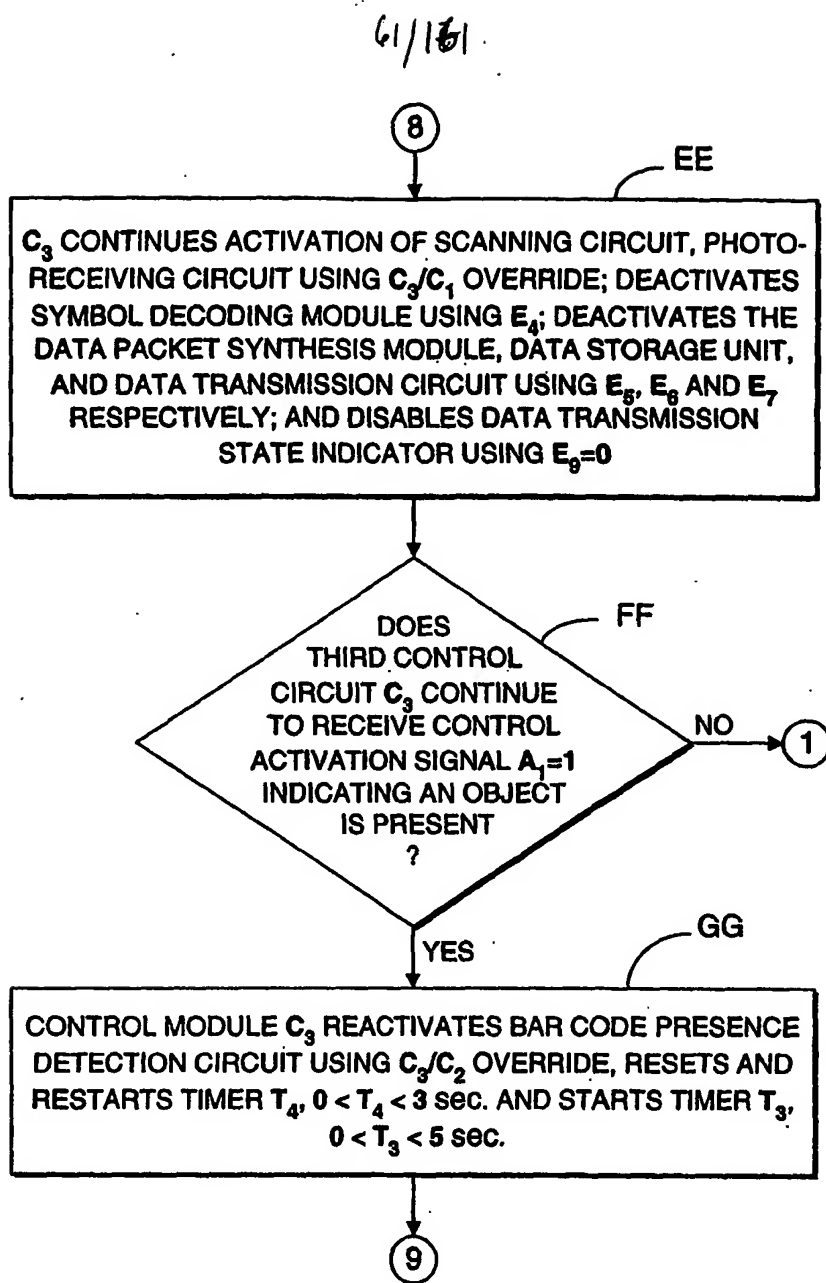


FIG. 20E

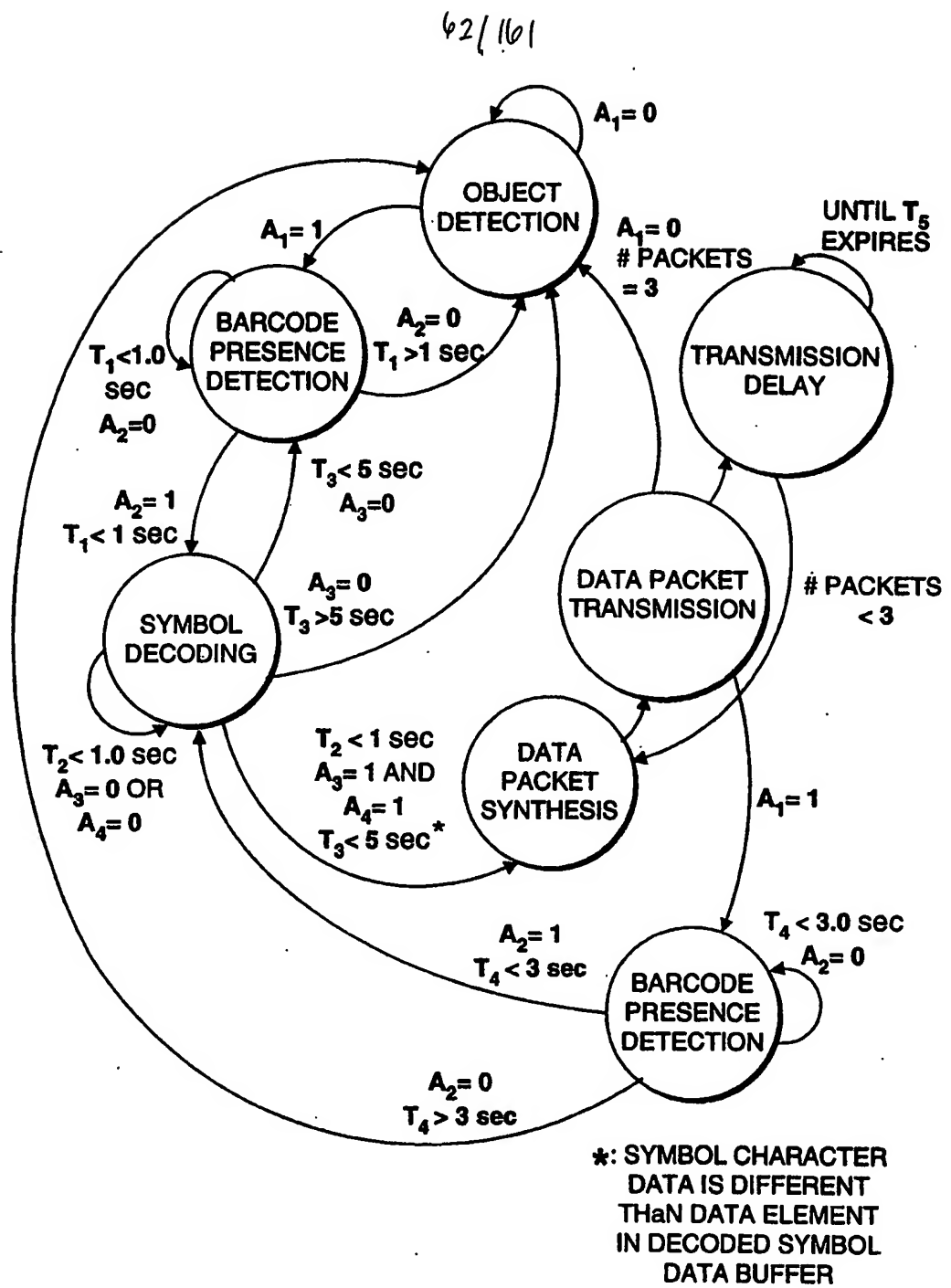


FIG. 21

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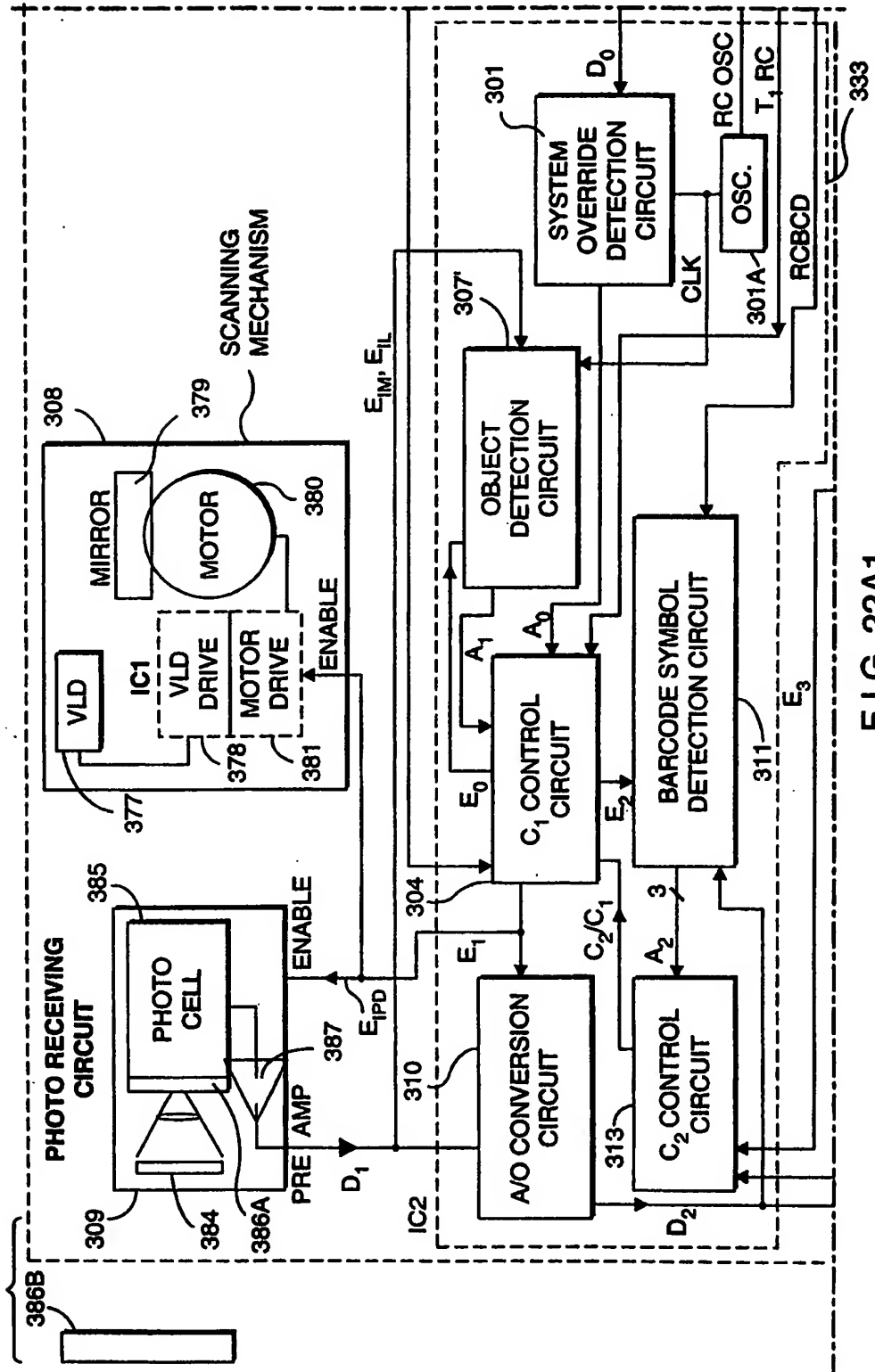


FIG. 22A1

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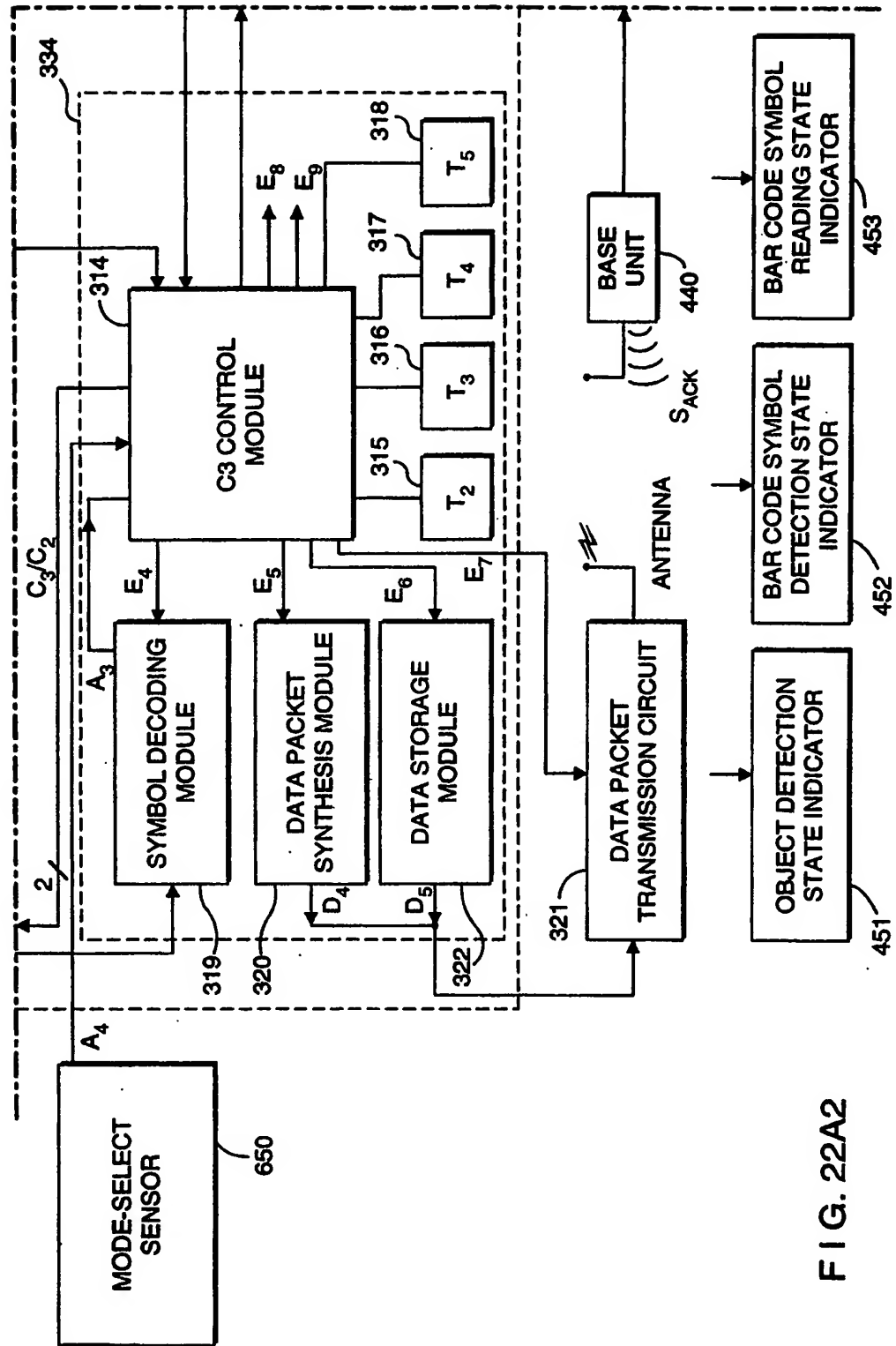


FIG. 22A2

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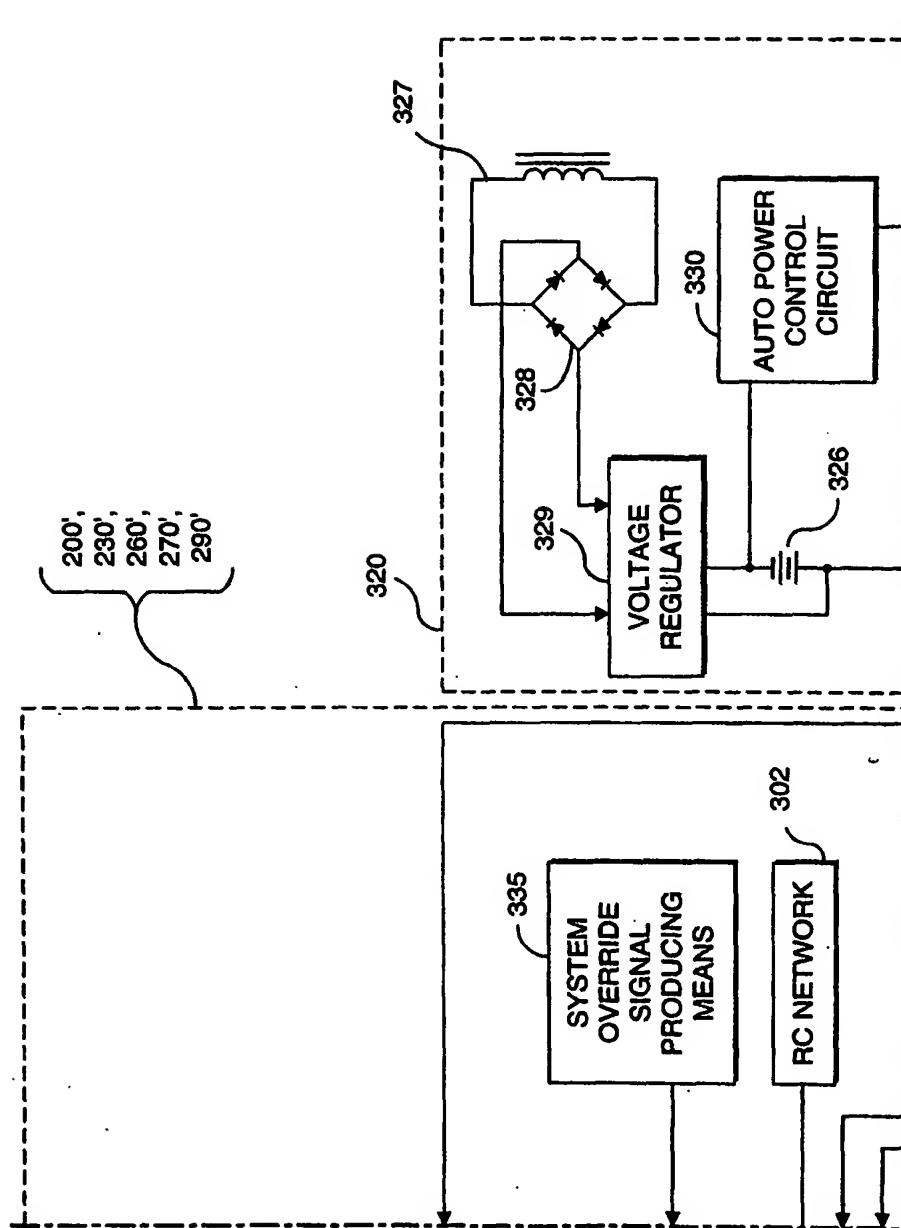


FIG. 22A3

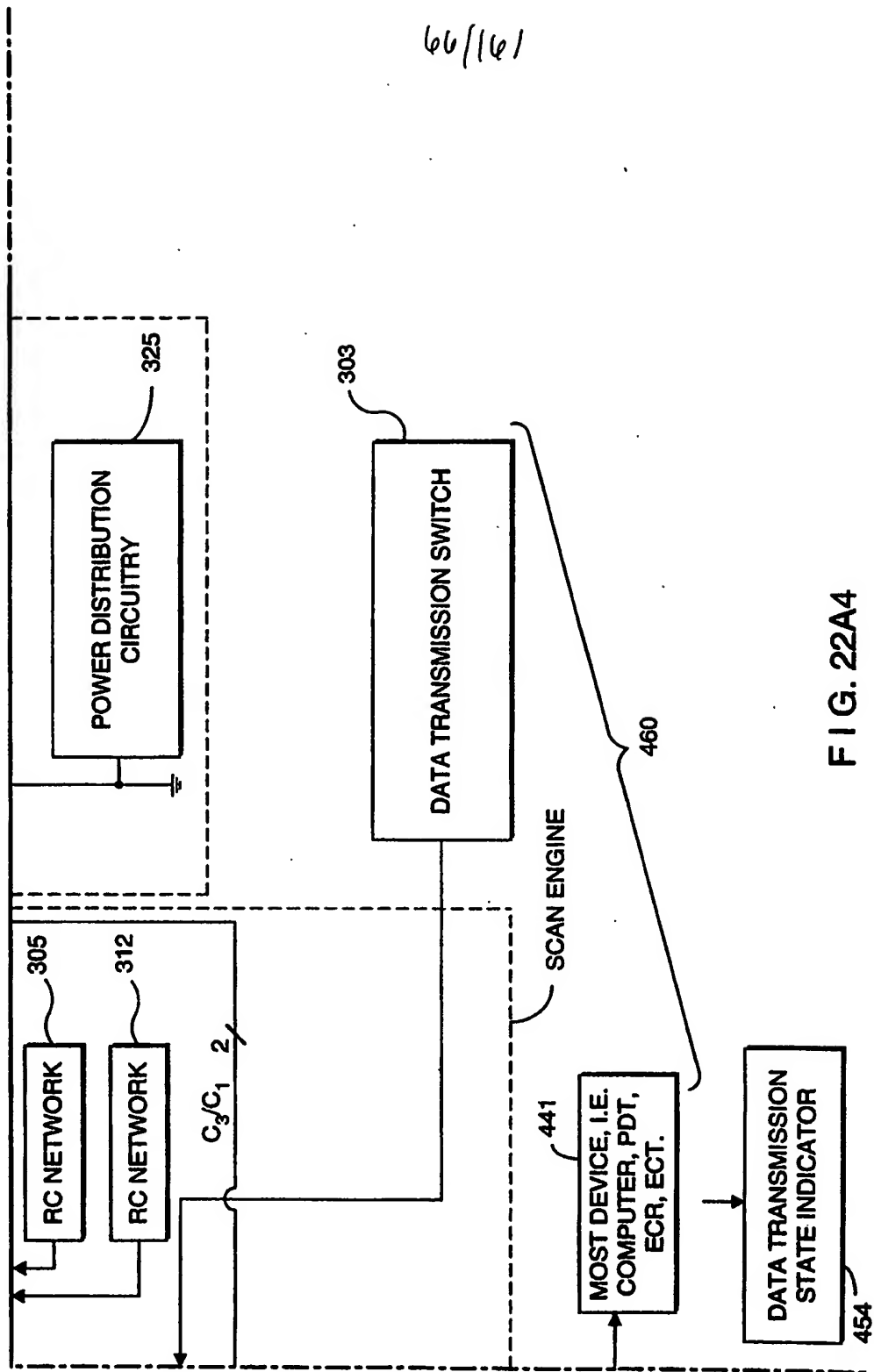


FIG. 22A4

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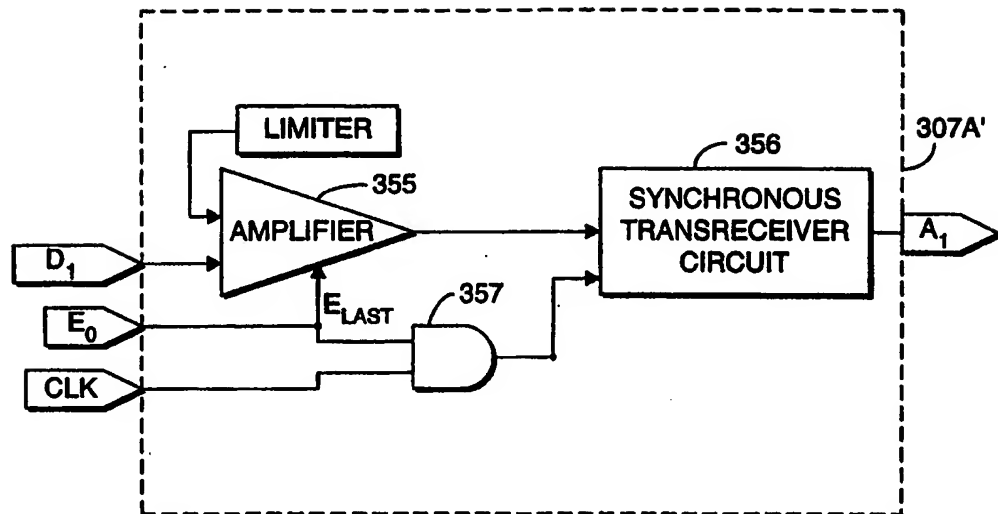


FIG. 22B

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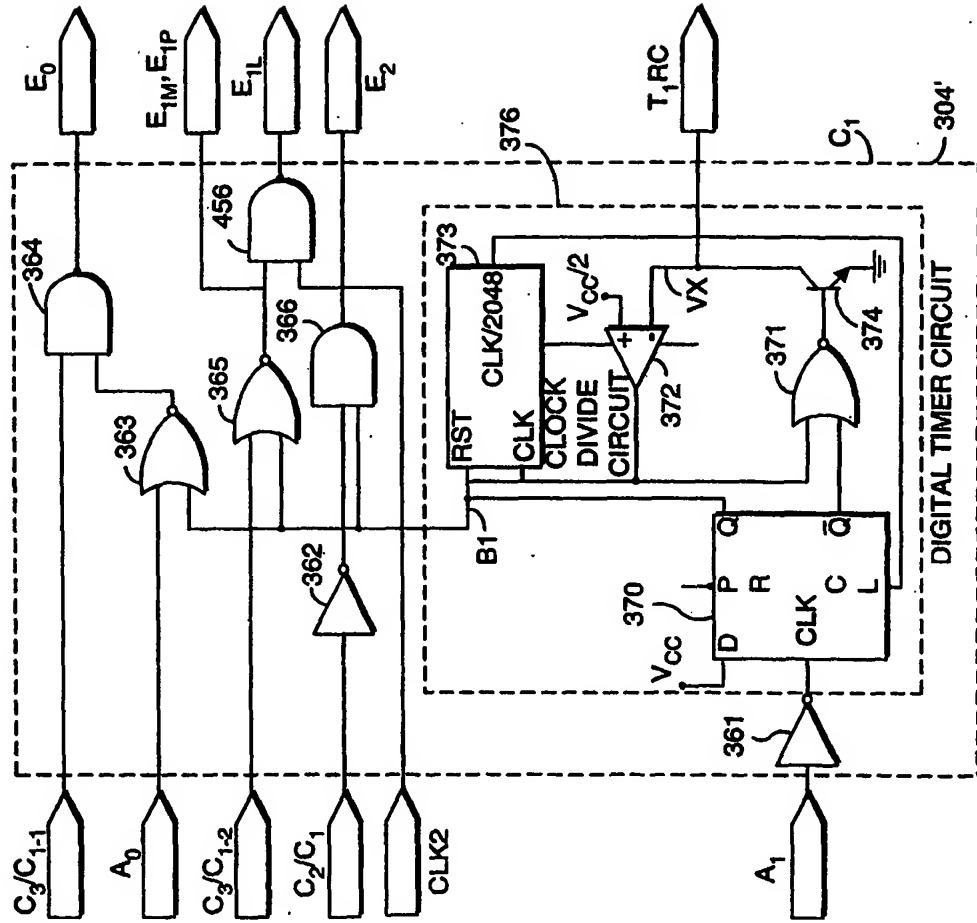


FIG. 22C

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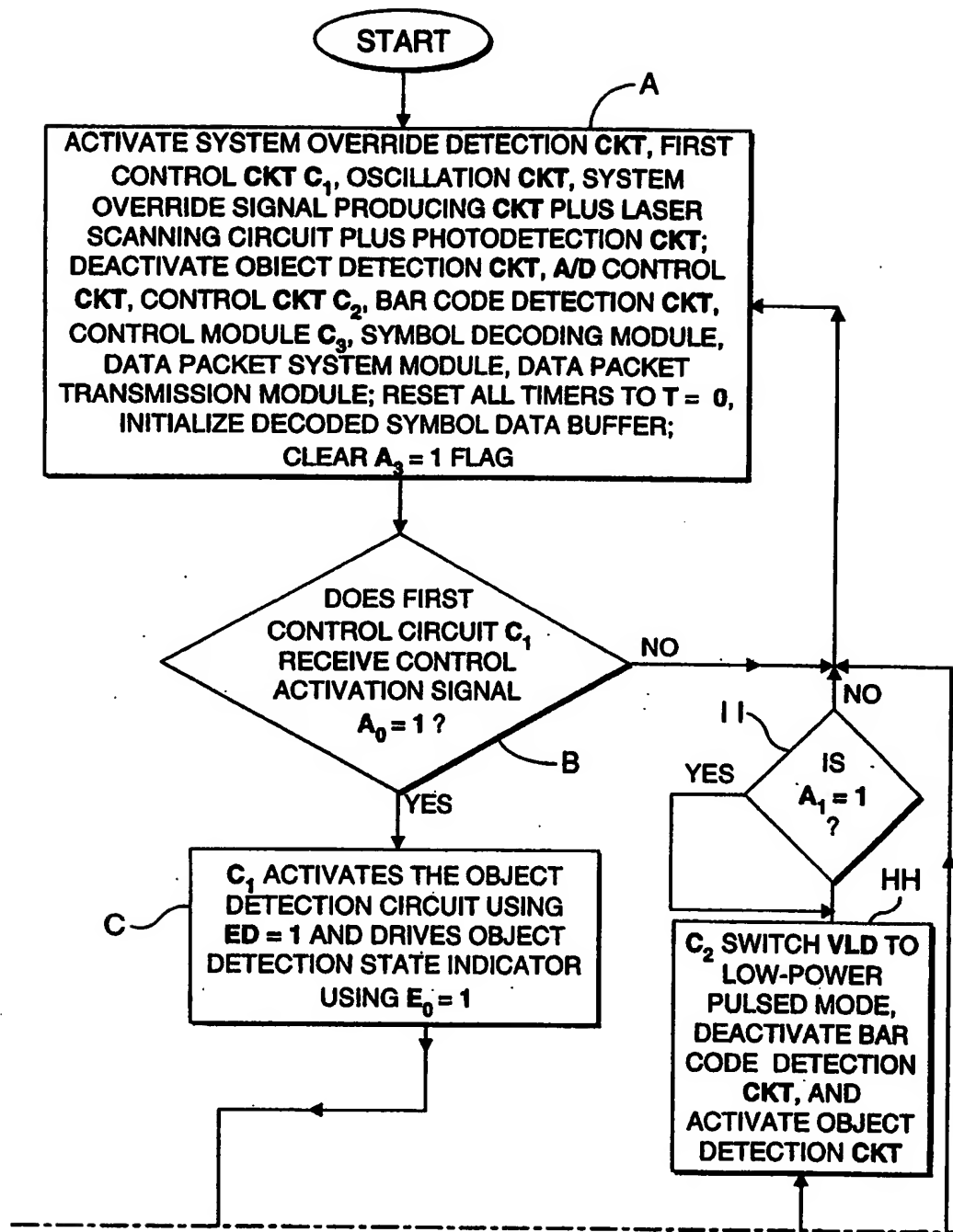


FIG. 23A1

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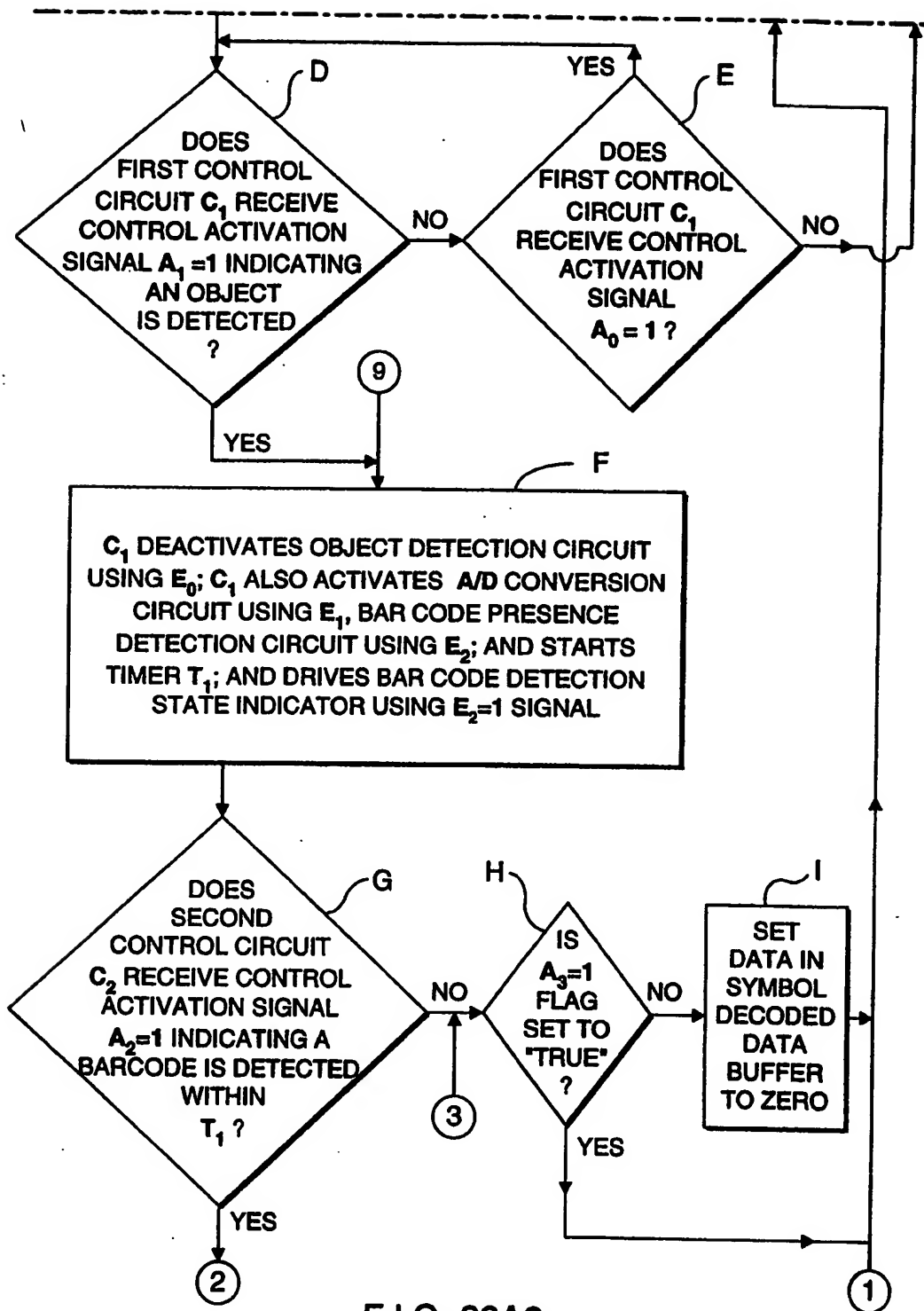
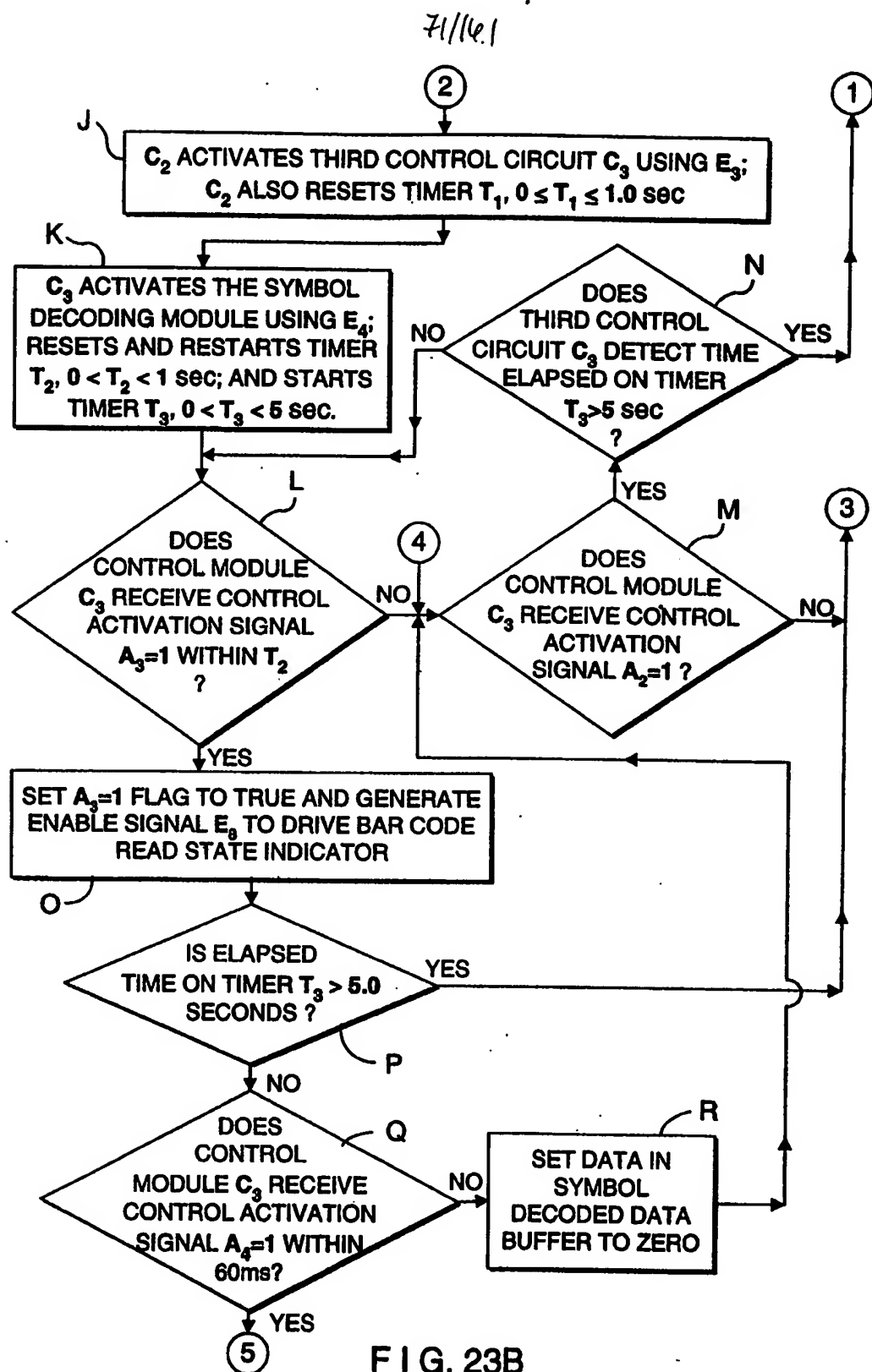


FIG. 23A2



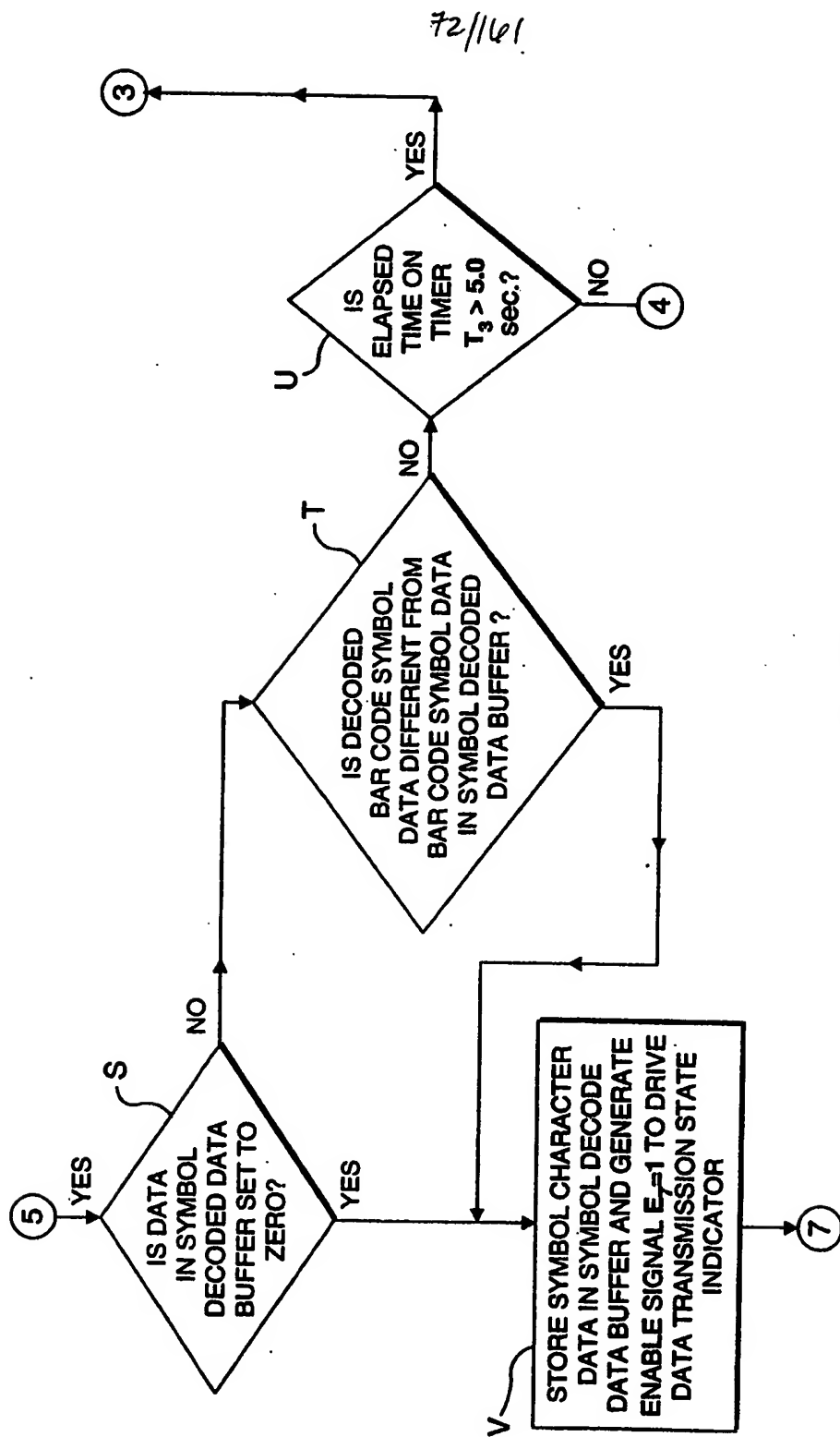


FIG. 23C

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7

THIRD CONTROL CIRCUIT C_3 CONTINUES ACTIVATION OF LASER DIODE, SCANNING MOTOR, PHOTORECEIVING CIRCUIT, A/D CONVERSION CIRCUIT; DEACTIVATES SYMBOL DECODING MODULE; AND COMMENCES ACTIVATION DATA PACKET SYNTHESIS MODULE

W

UNDER C_3 CONTROL DATA PACKET SYNTHESIS MODULE SETS PACKET NUMBER TO 1 AND INCREMENTS DATA PACKET GROUP NUMBER MODULE COUNTER

X

UNDER C_3 CONTROL DATA PACKET SYNTHESIS MODULE CONSTRUCTS DATA PACKET CONSISTING OF SYMBOL CHARACTER DATA, TRANSMITTER NUMBER, DATA PACKET GROUP NUMBER, CHECK CHARACTER AND FRAMING CHARACTERS

Y

C_3 ACTIVATES DATA PACKET TRANSMISSION CIRCUIT

Z

UNDER C_3 CONTROL DATA PACKET SYNTHESIS MODULE OUTPUTS PACKET TO DATA PACKET TRANSMISSION CIRCUIT

AA

C_3 DETERMINES IS PACKET NUMBER < 3 ?

BB

NO

8

YES

UNDER C_3 CONTROL DATA PACKET SYNTHESIS MODULE INCREMENTS DATA PACKET GROUP NUMBER

CC

C_3 ALLOWS T_5 TO EXPIRE IN ORDER TO DELAY TRANSMISSION BASED ON LAST TWO DIGITS OF TRANSMITTER NUMBER

DD

FIG. 23D

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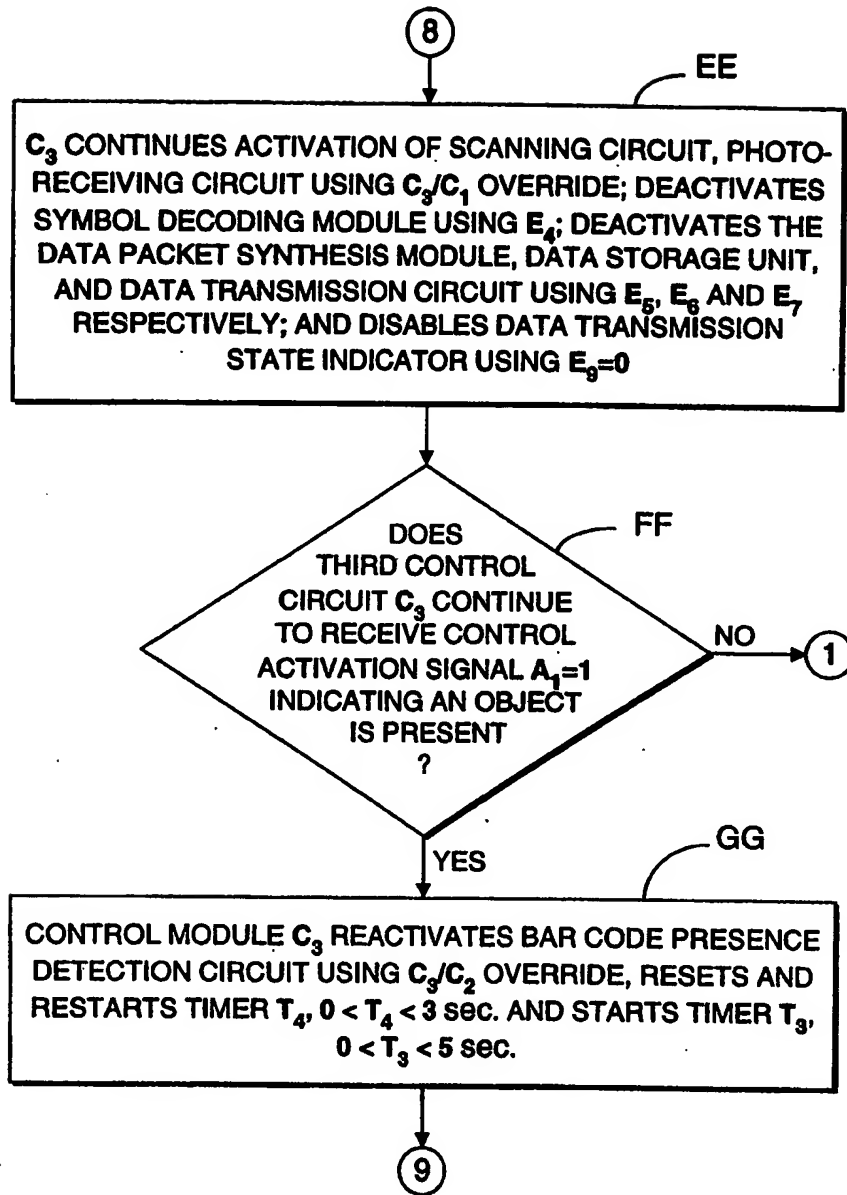


FIG. 23E

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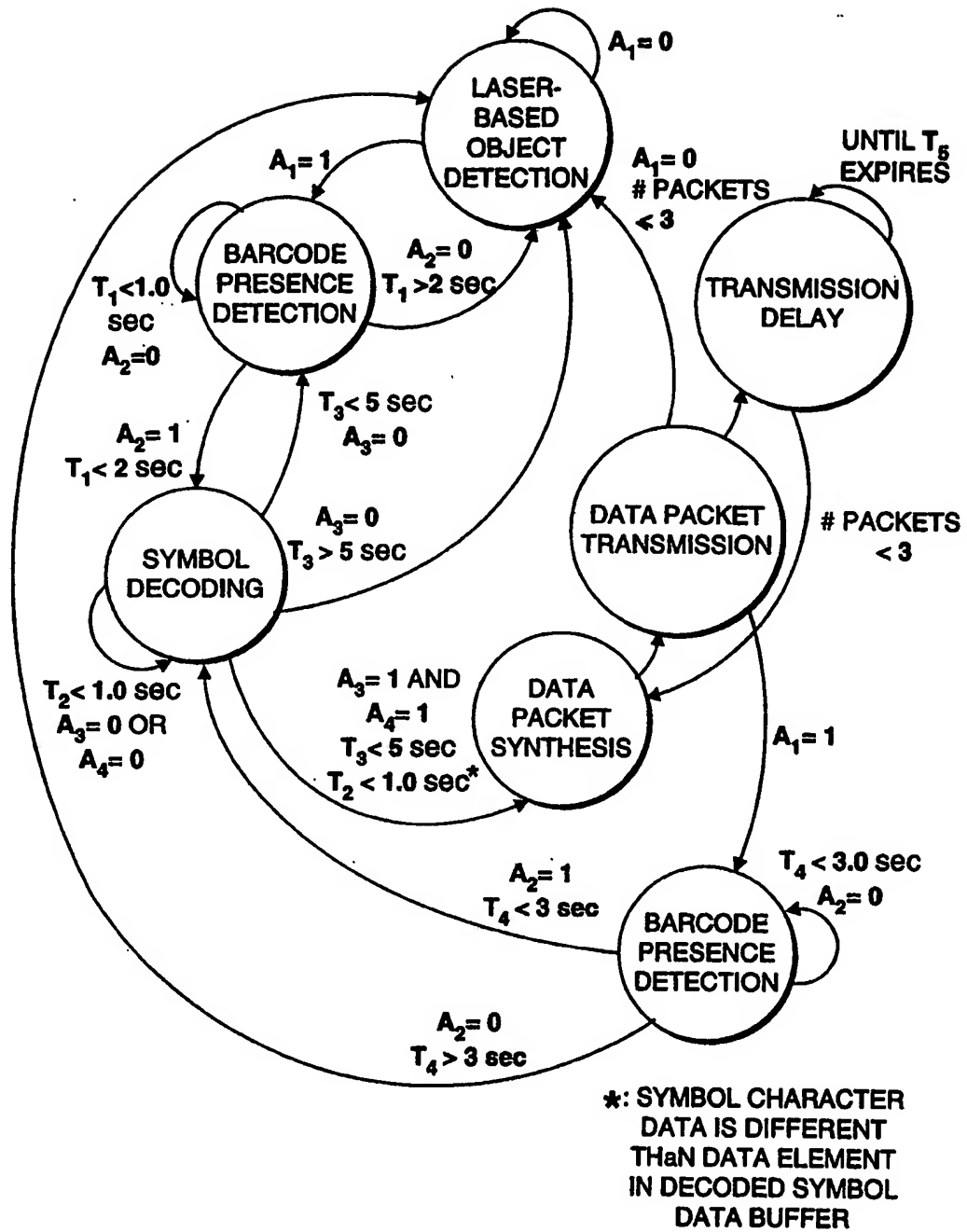


FIG. 24

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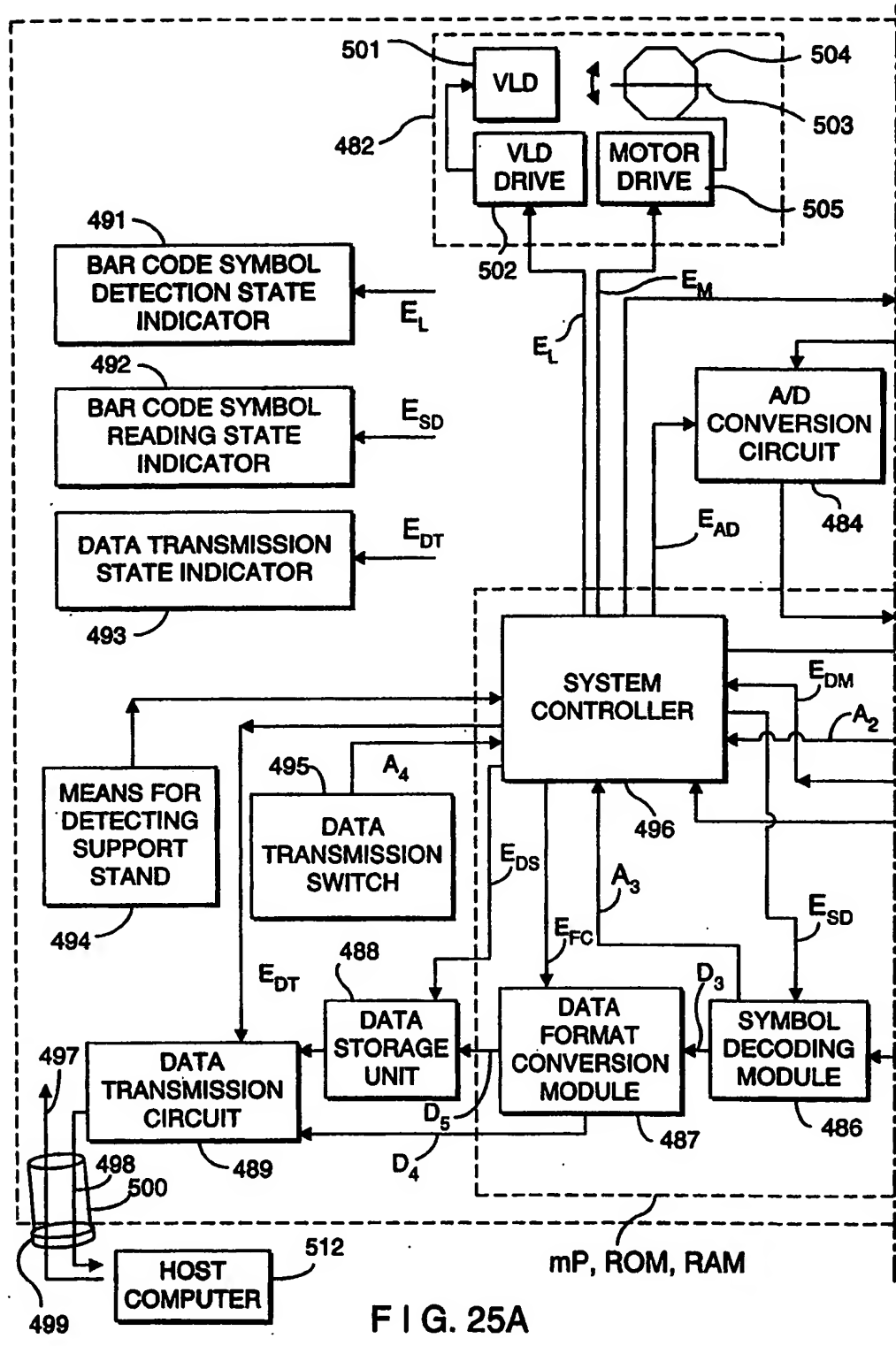


FIG. 25A

480

481

483

507

509

508

510

A

E_{PD}

D_1

485

BAR CODE SYMBOL DETECTION MODULE

D_2

200"

230"

260"

270"

290"

200°
 230°
 260°
 270°
 290°

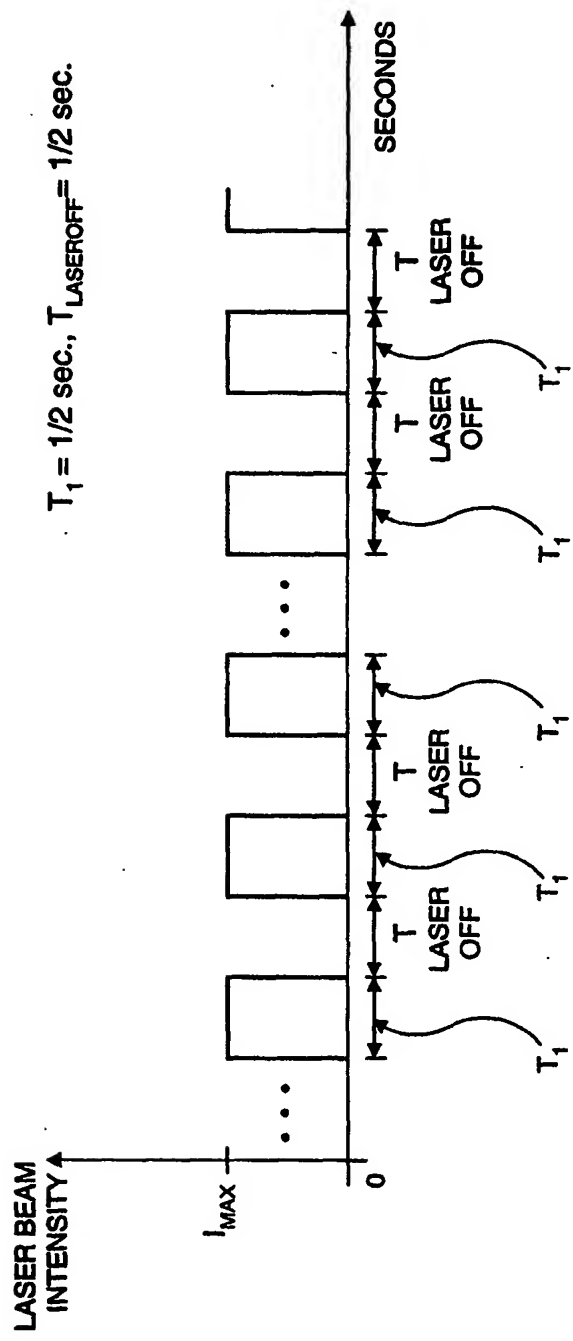
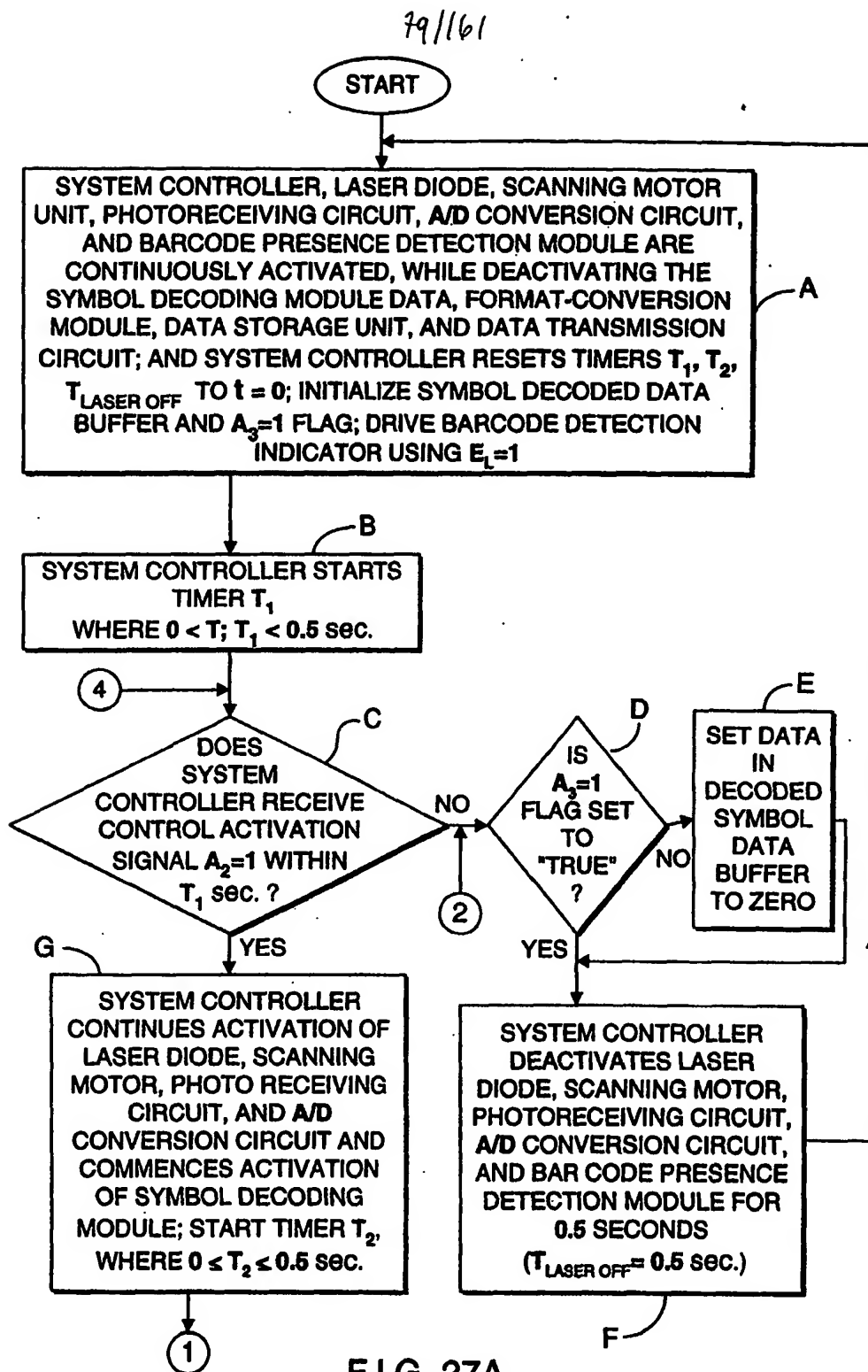


FIG. 26

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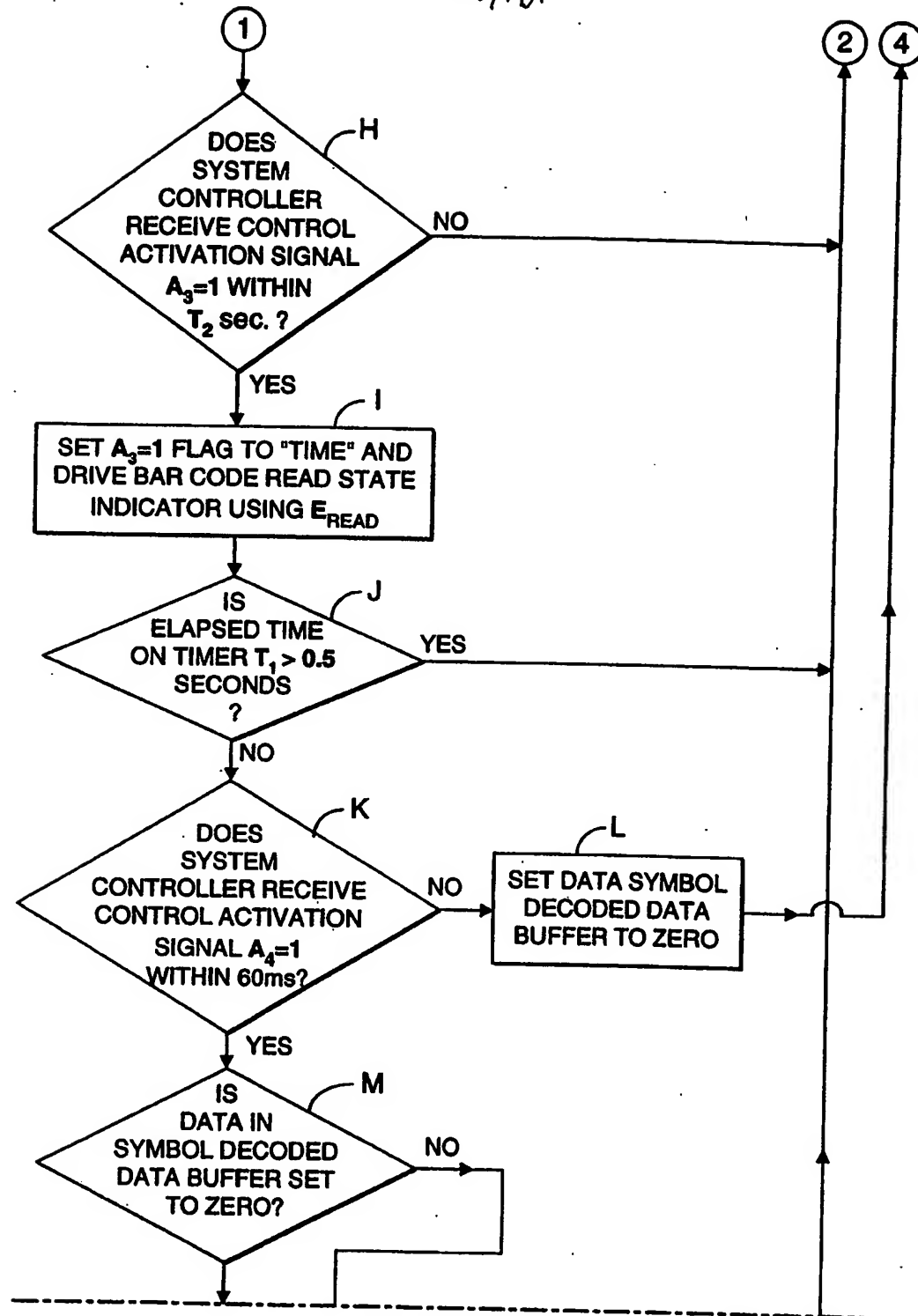


FIG. 27B1

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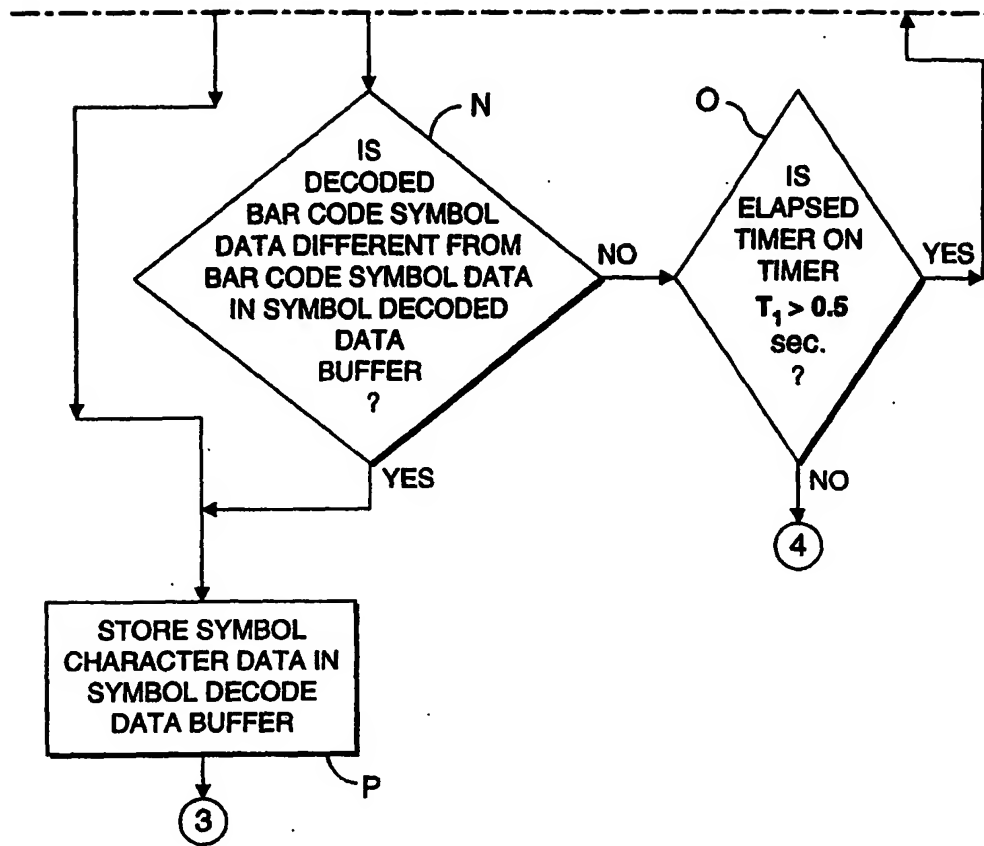


FIG. 27B2

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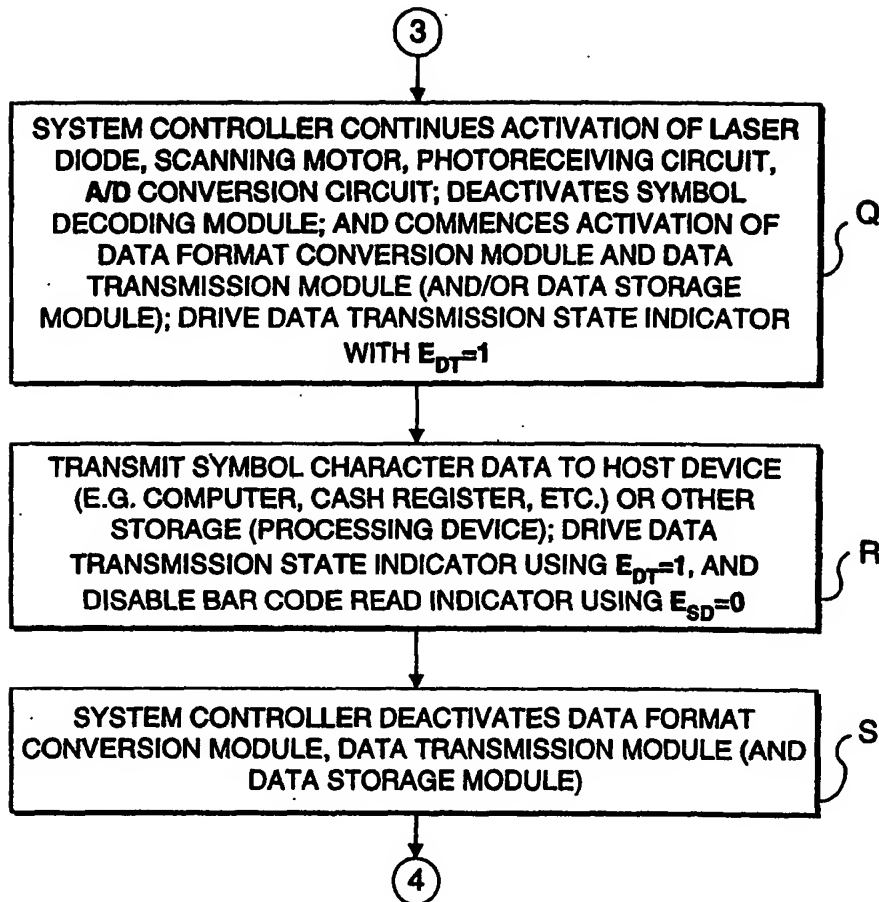
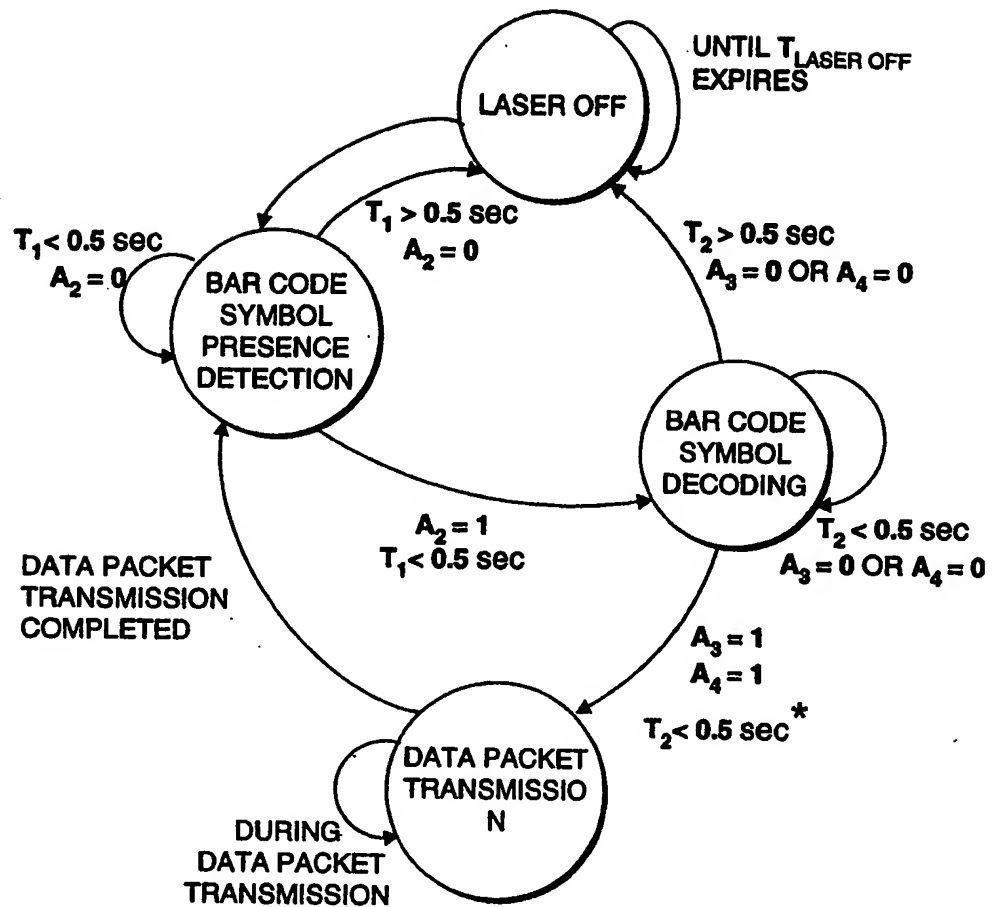


FIG. 27C

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*: SYMBOL CHARACTER DATA IS DIFFERENT THAN DATA ELEMENT IN DECODED SYMBOL DATA BUFFER

FIG. 28

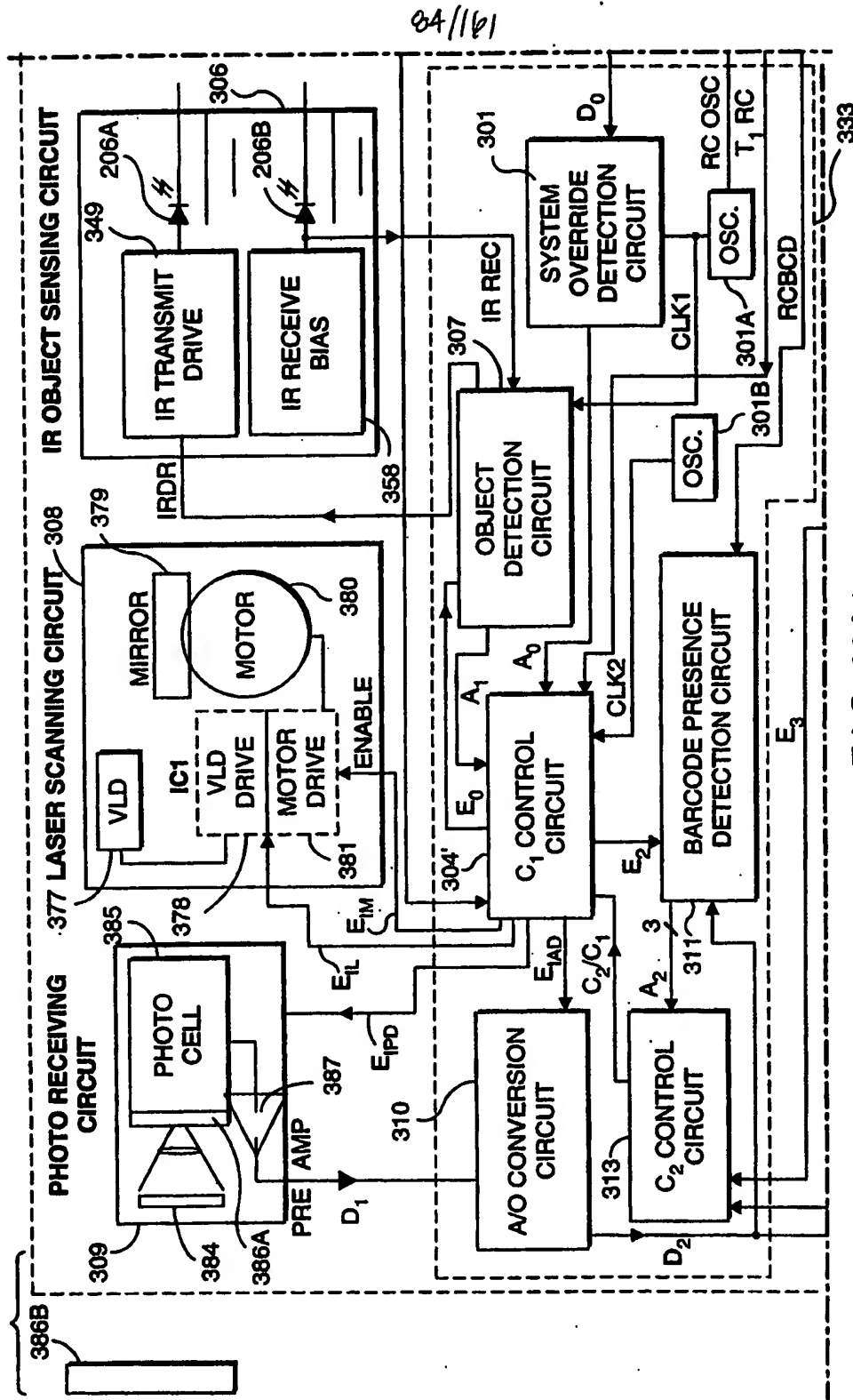


FIG. 29A1

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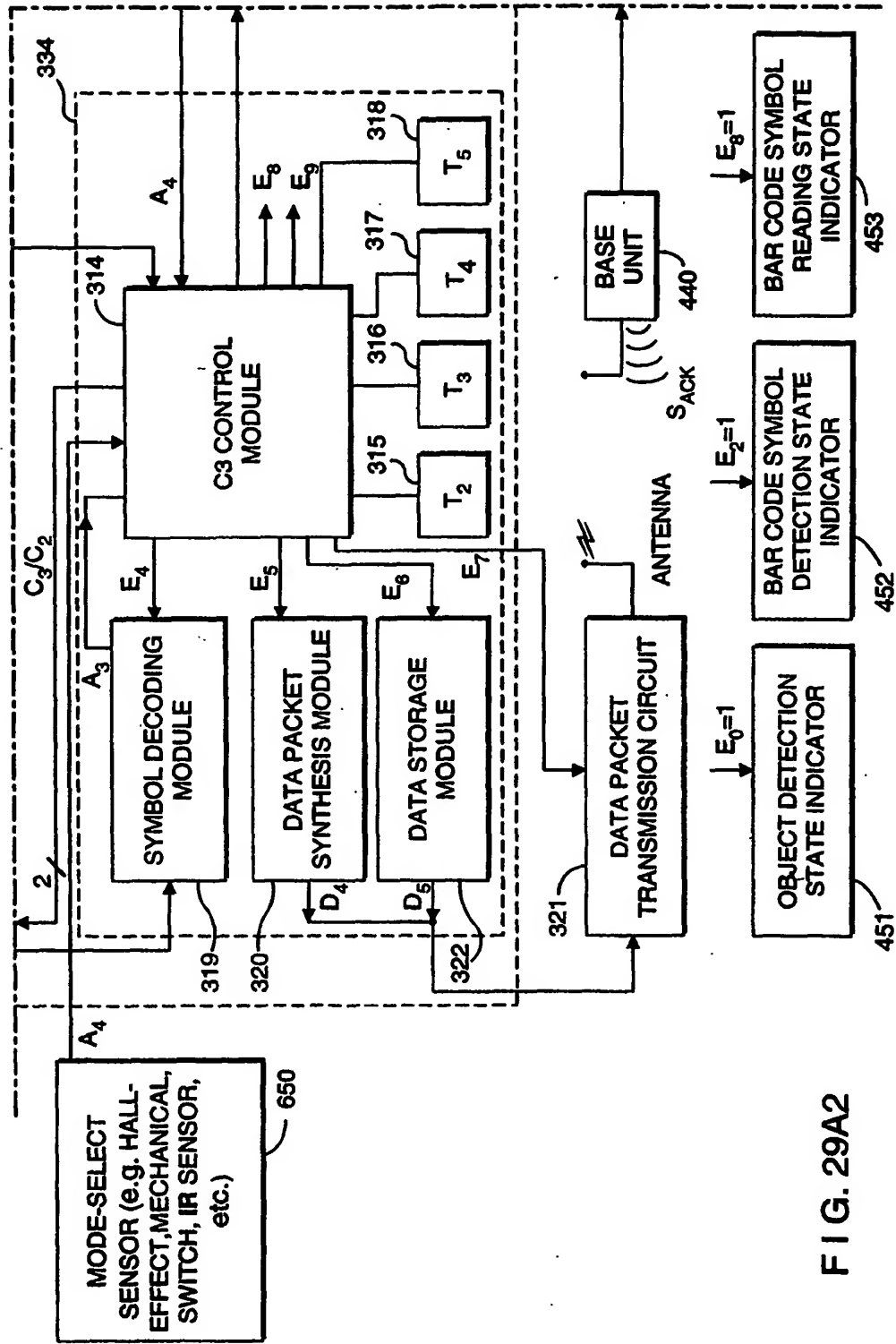


FIG. 29A2

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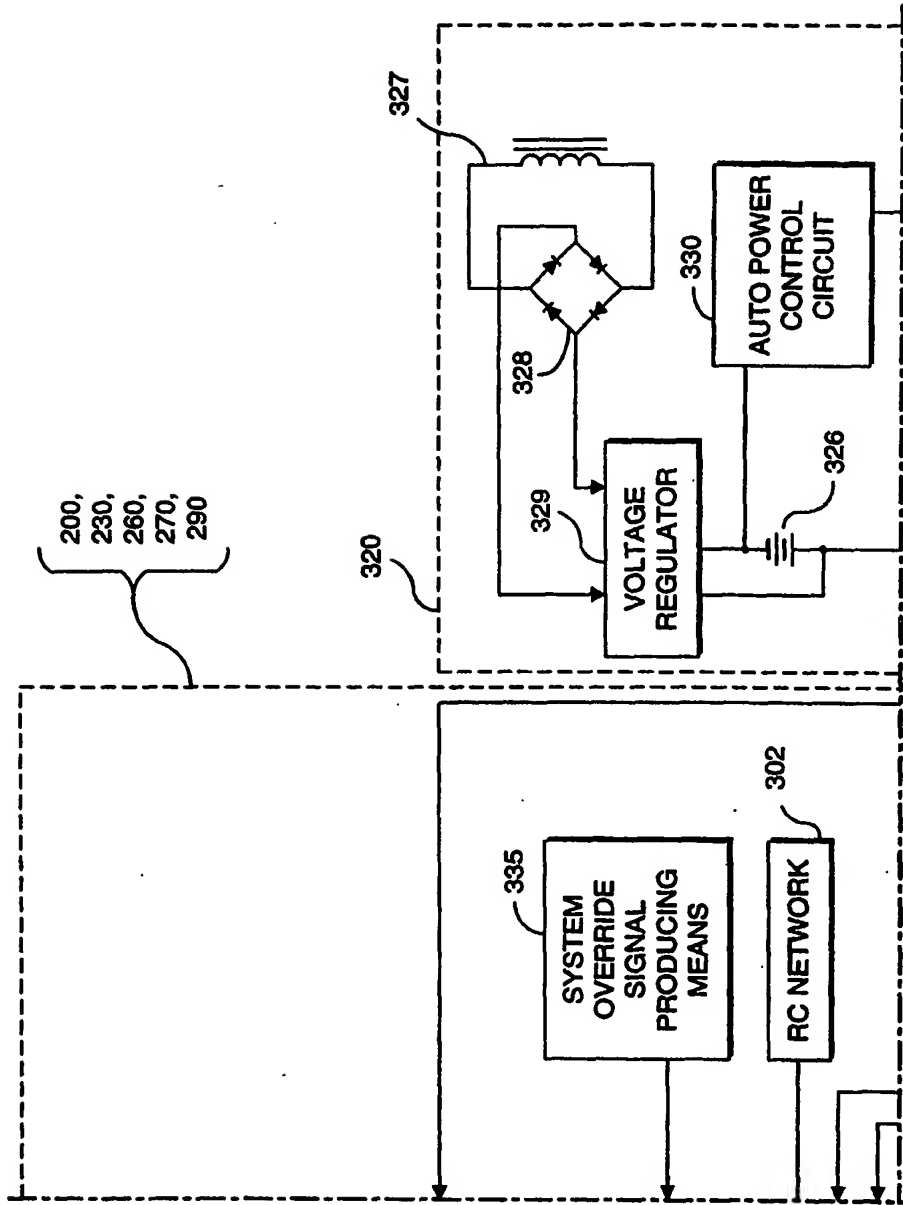


FIG. 29A3

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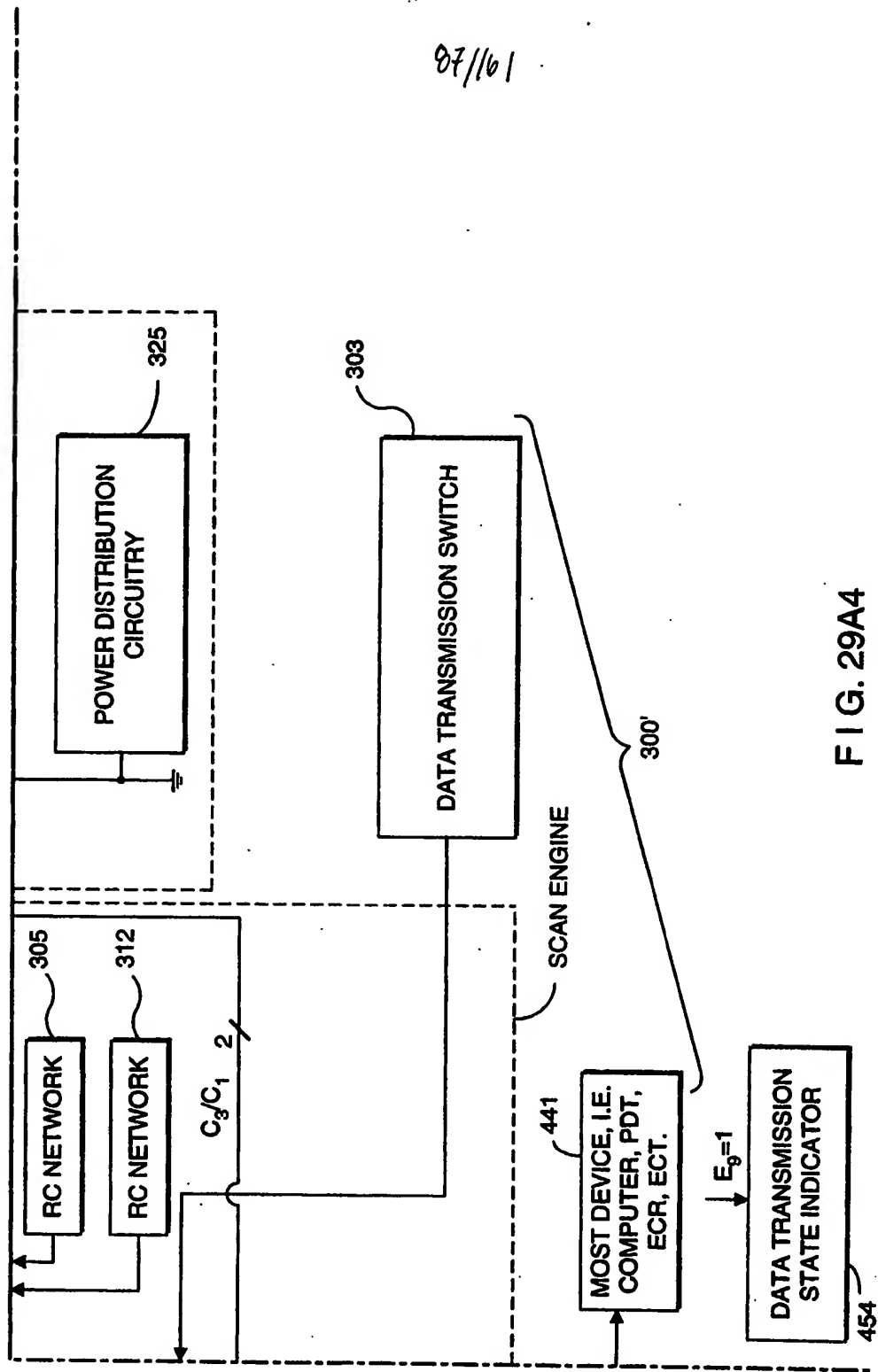
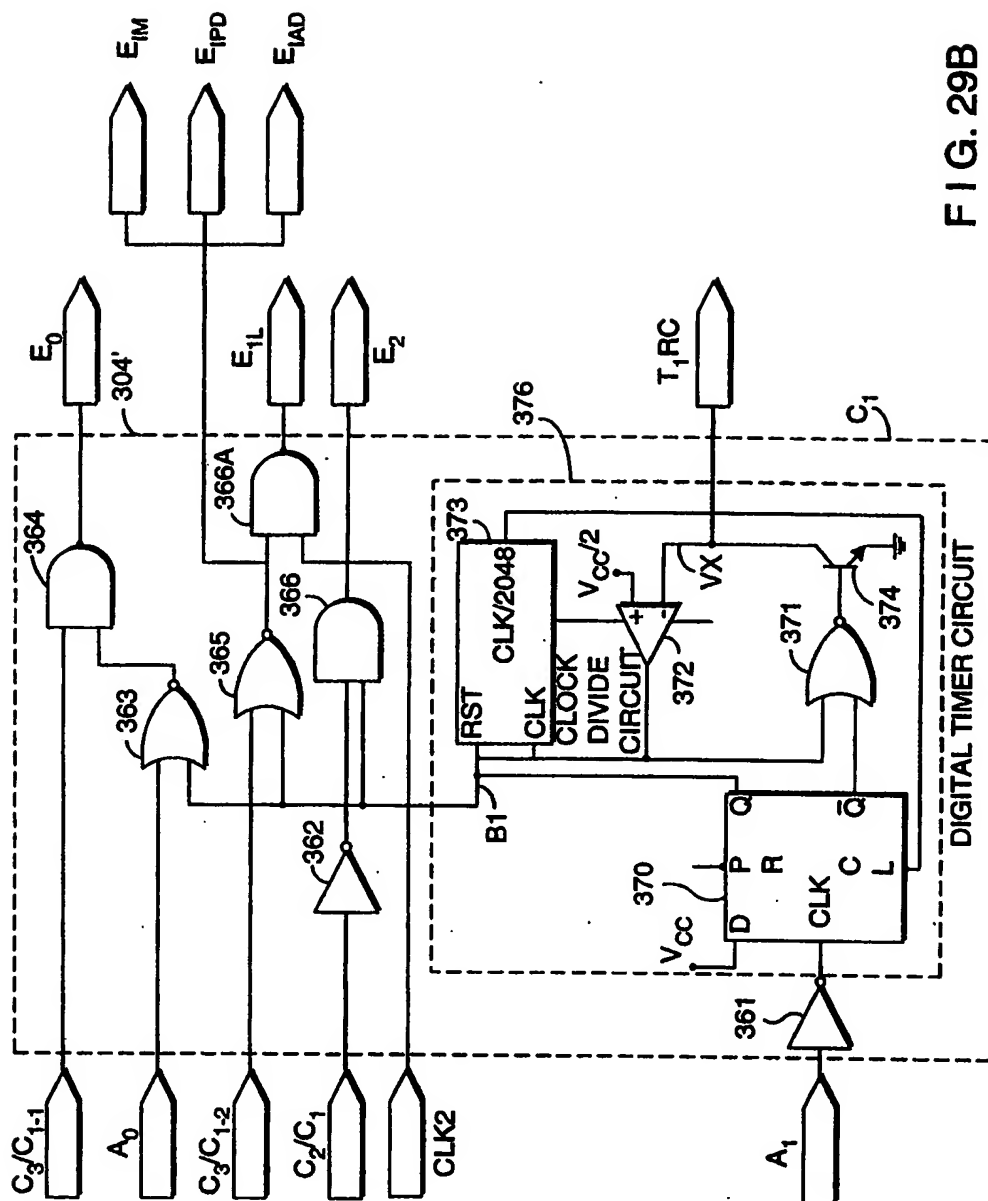


FIG. 29A4

FIG. 29B



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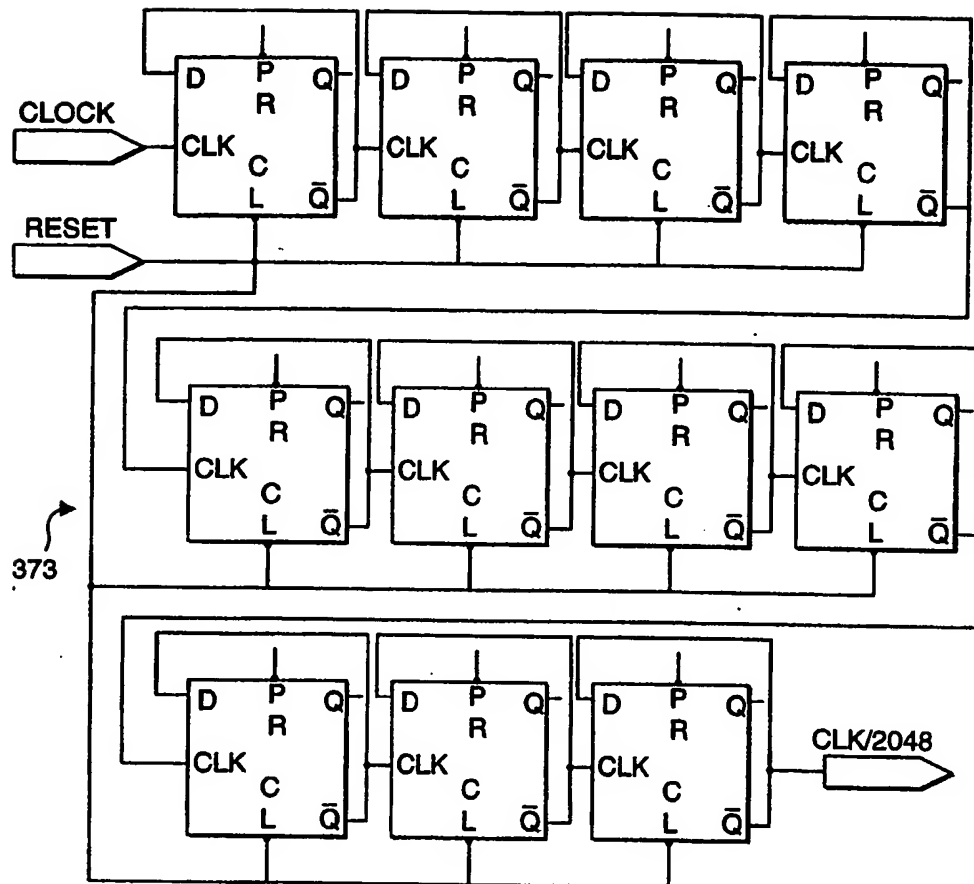


FIG. 29C

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$$\left\{ \begin{array}{l} E_0 = \overline{(B1 + A_0) (C_3 / C_{1-1})} \\ E_{IM} = E_{IPD} = E_{IAD} = \overline{(C_3 / C_{1-2}) + B1} \\ E_L = \overline{[(C_3 / C_{1-1}) + B1] [B2]} \\ E_2 = \overline{(C_2 / C_1) (B1)} \end{array} \right.$$

FIG. 29D

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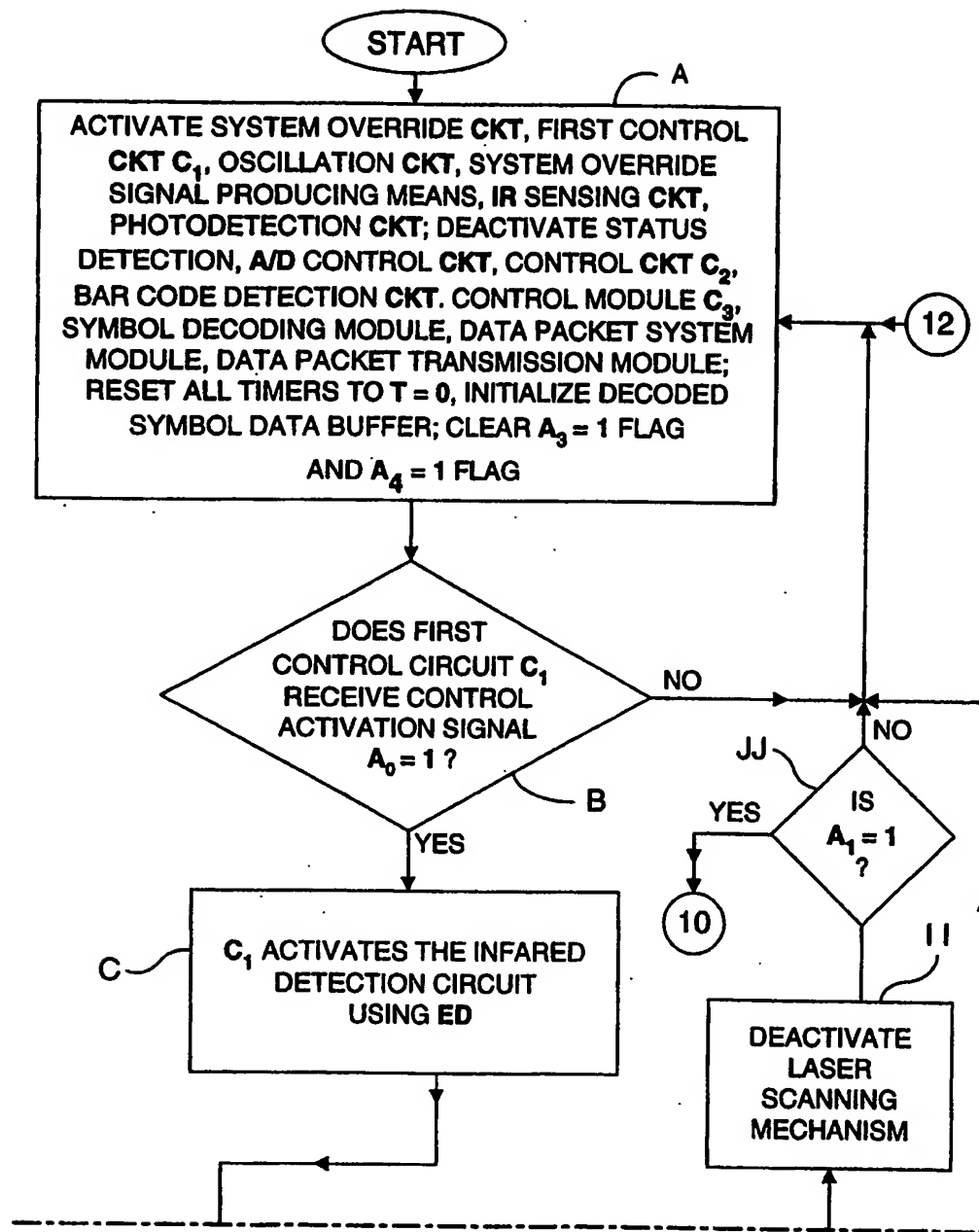


FIG. 30A1

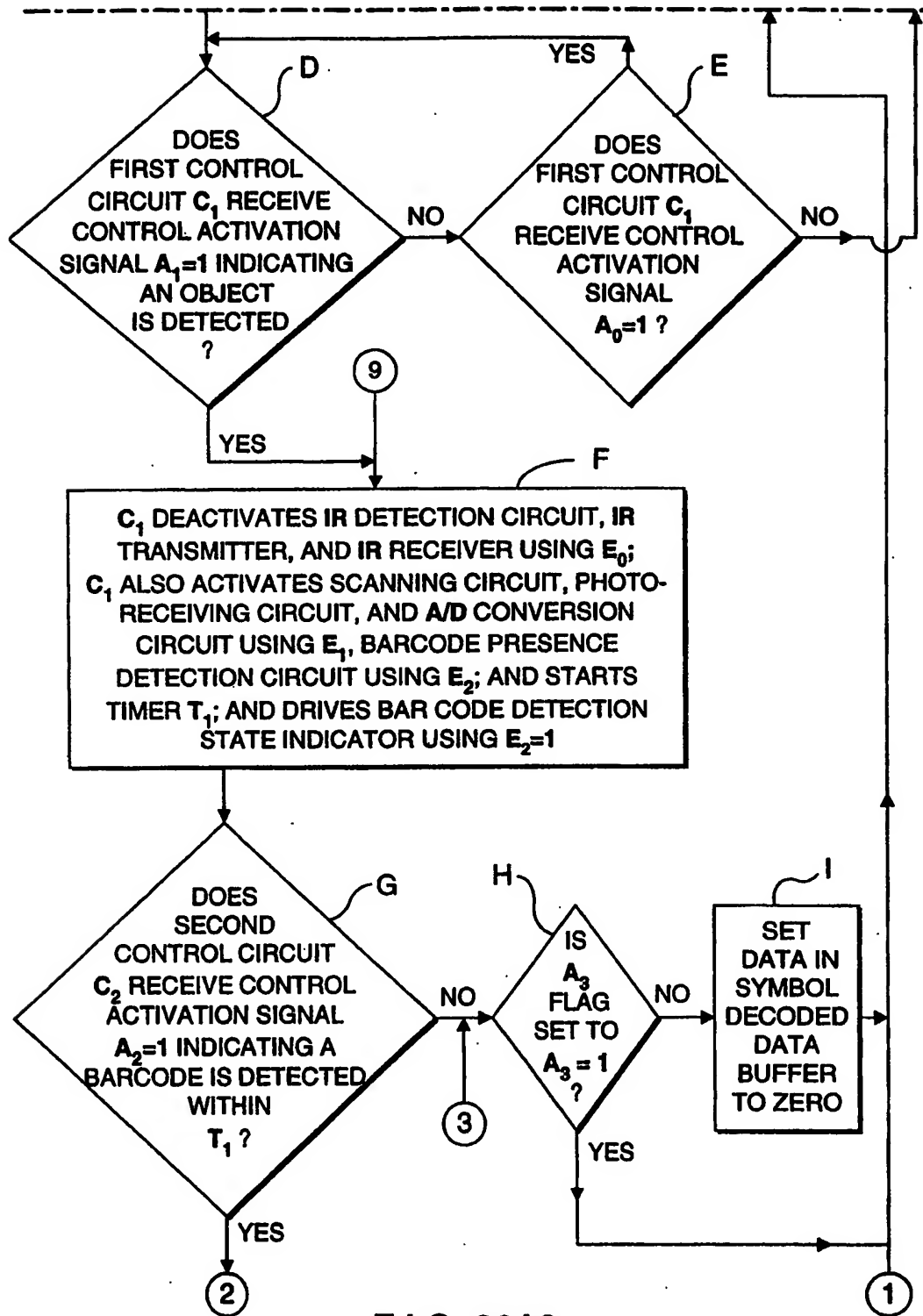
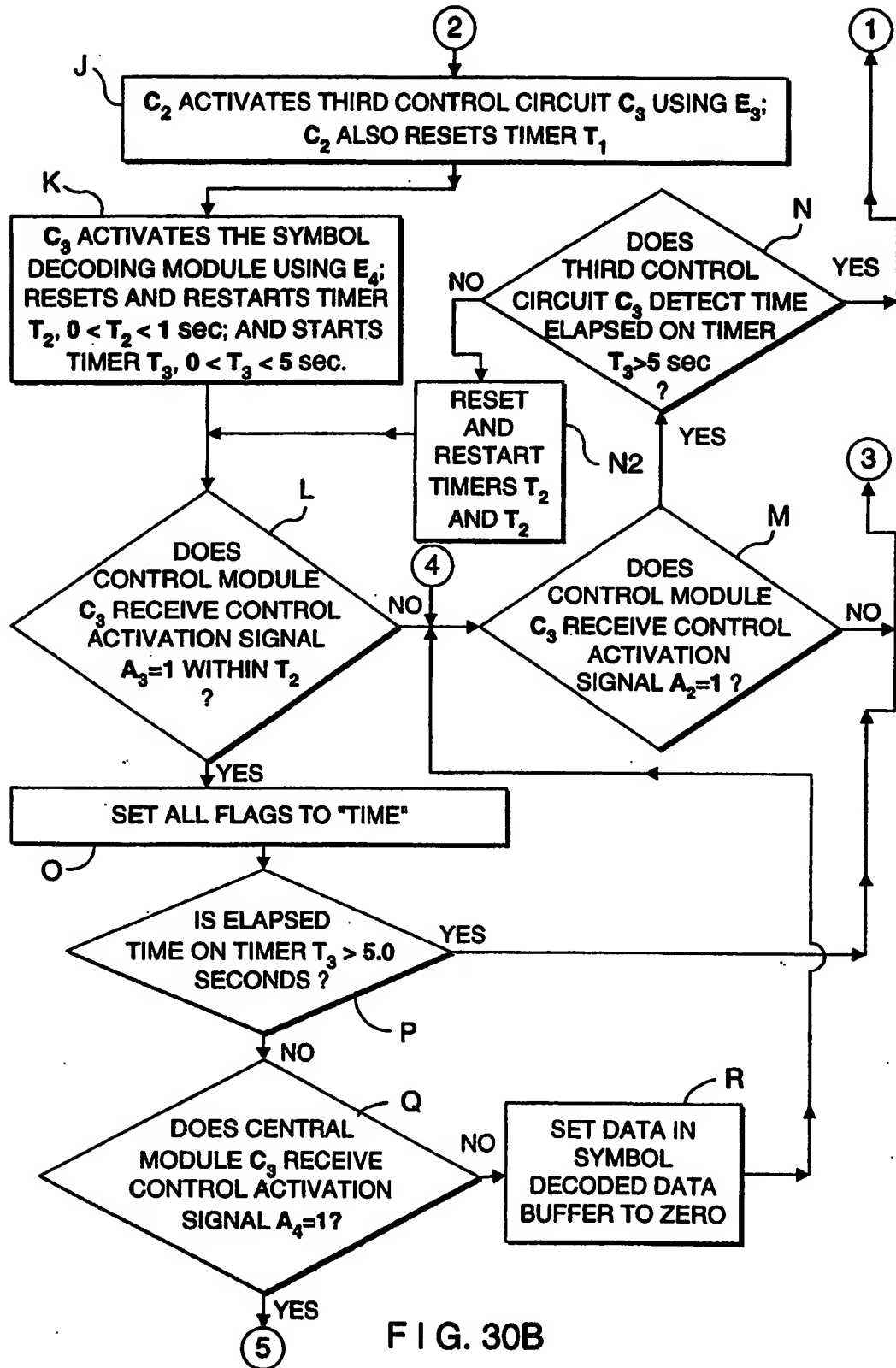


FIG. 30A2



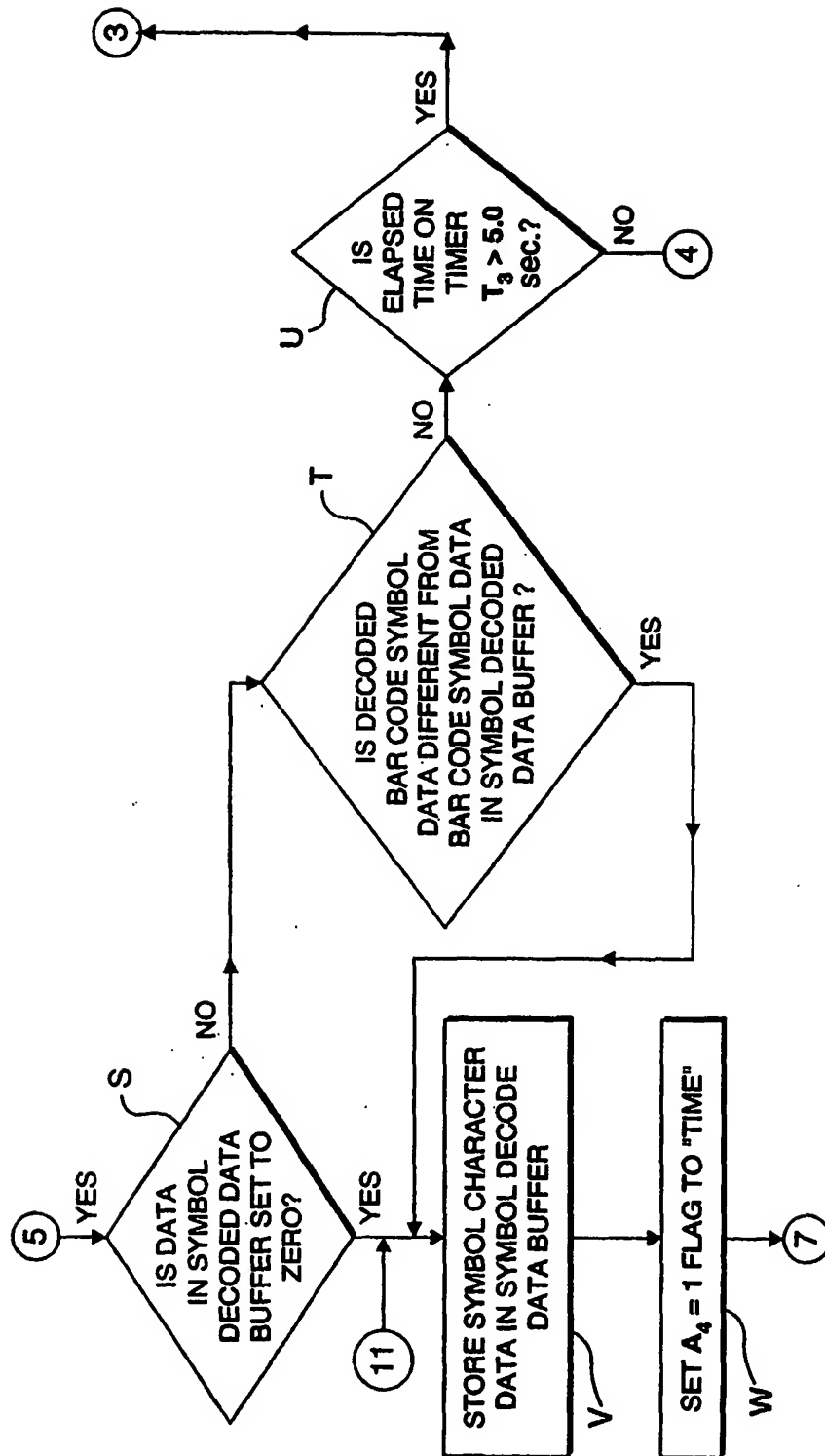


FIG. 30C

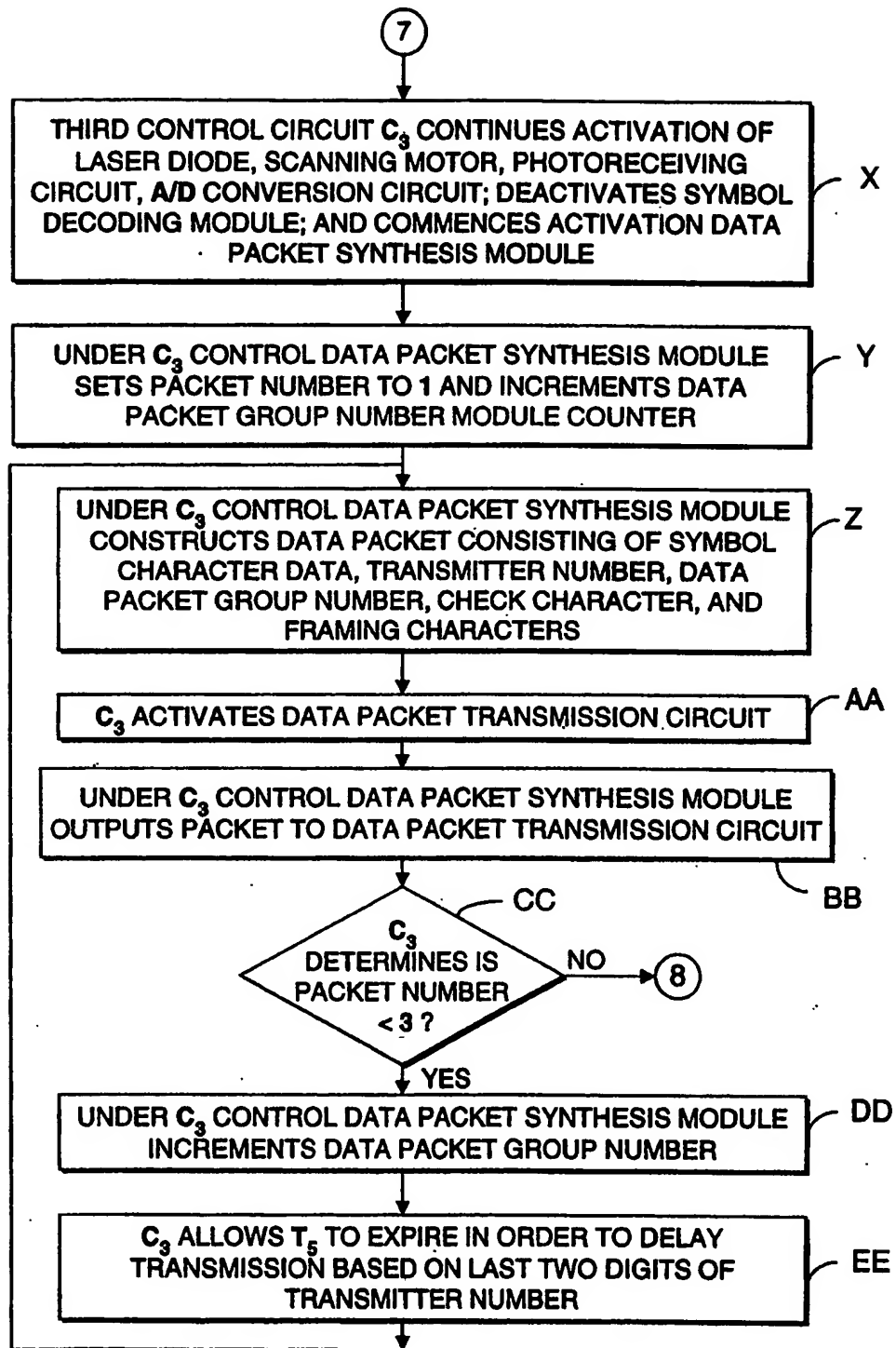


FIG. 30D

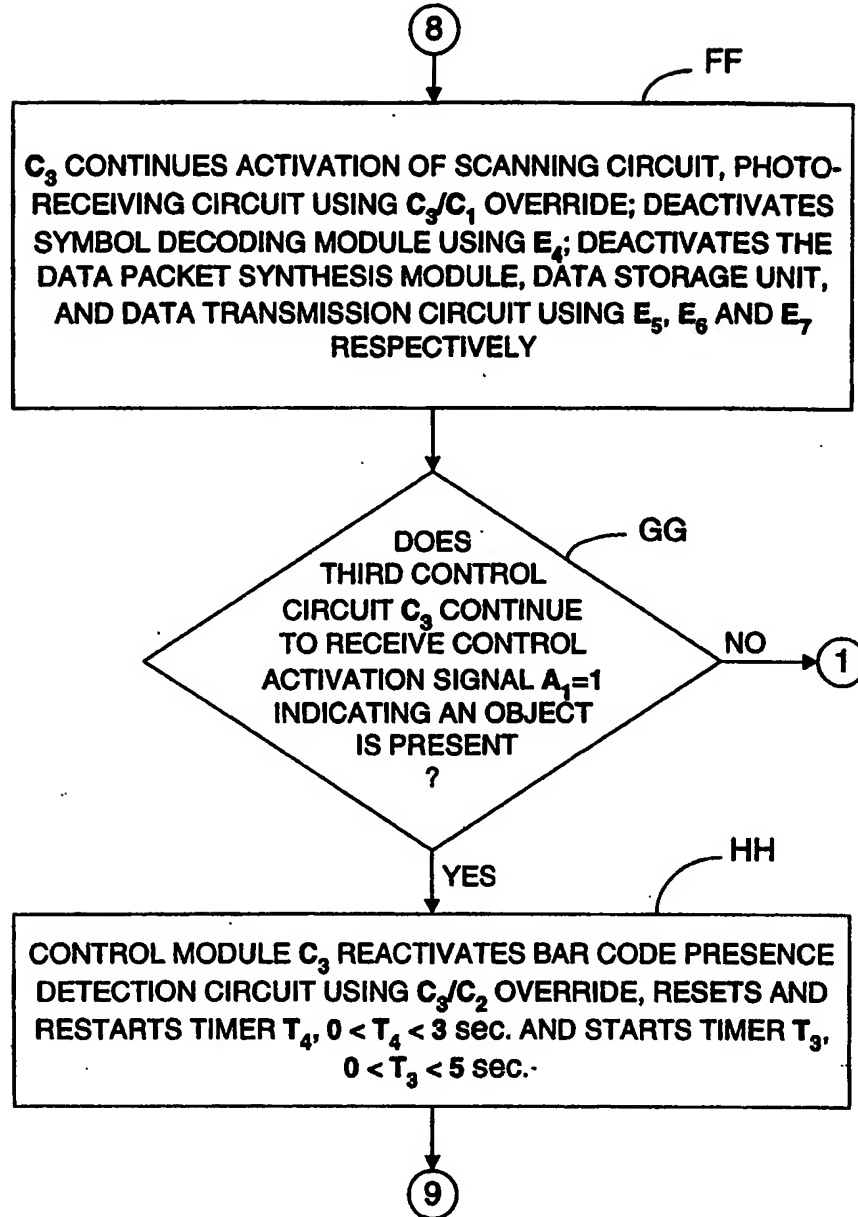


FIG. 30E

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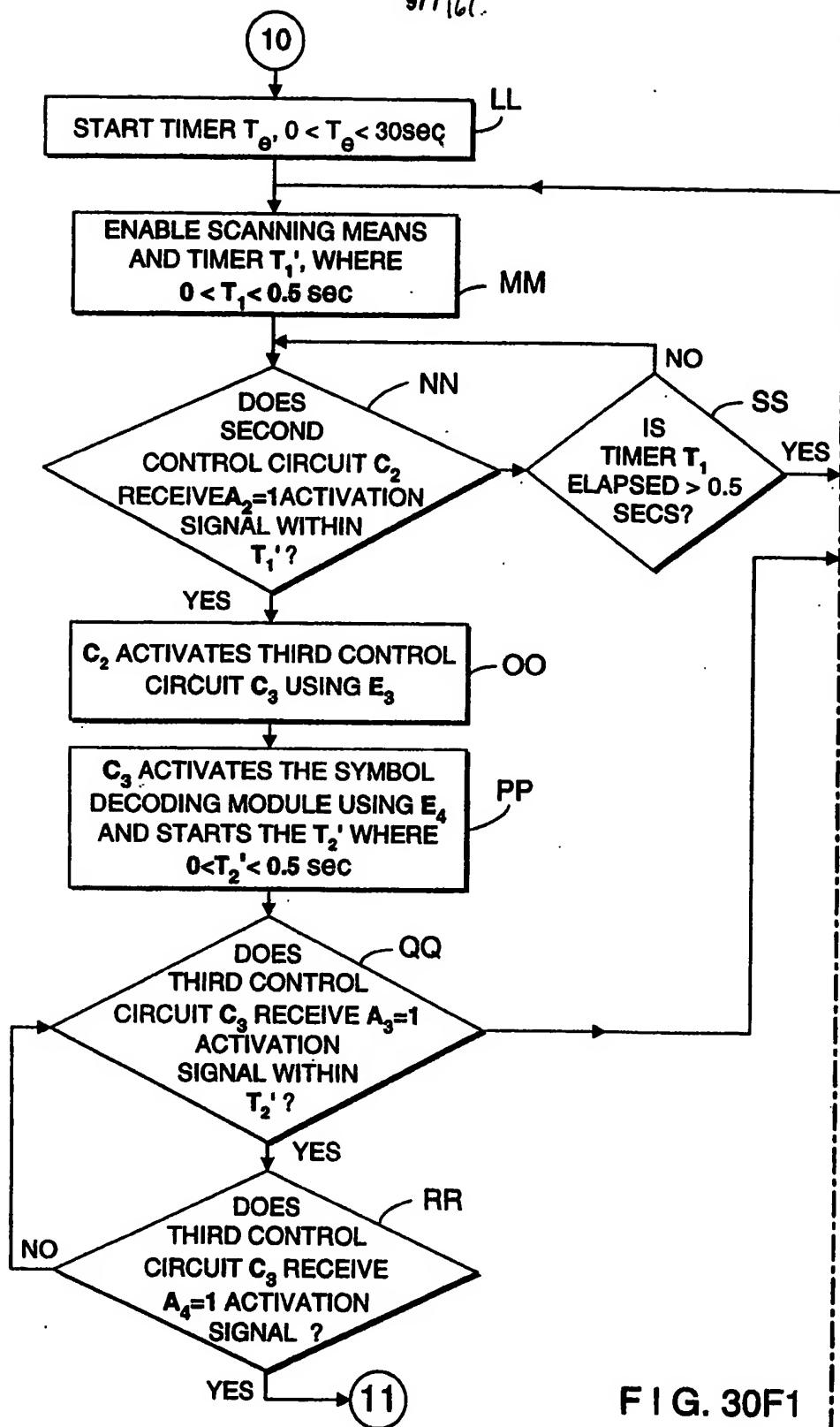
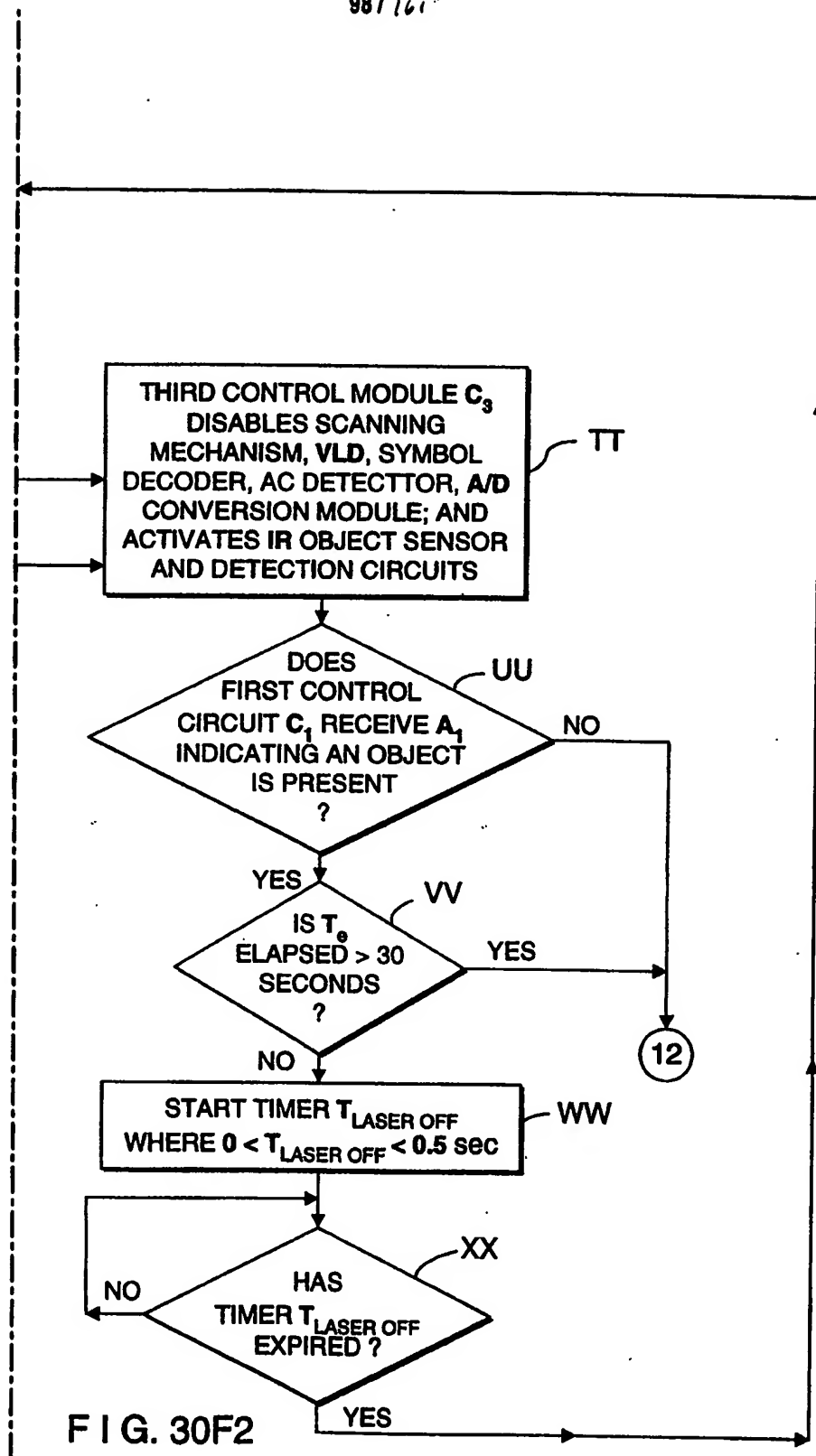


FIG. 30F1



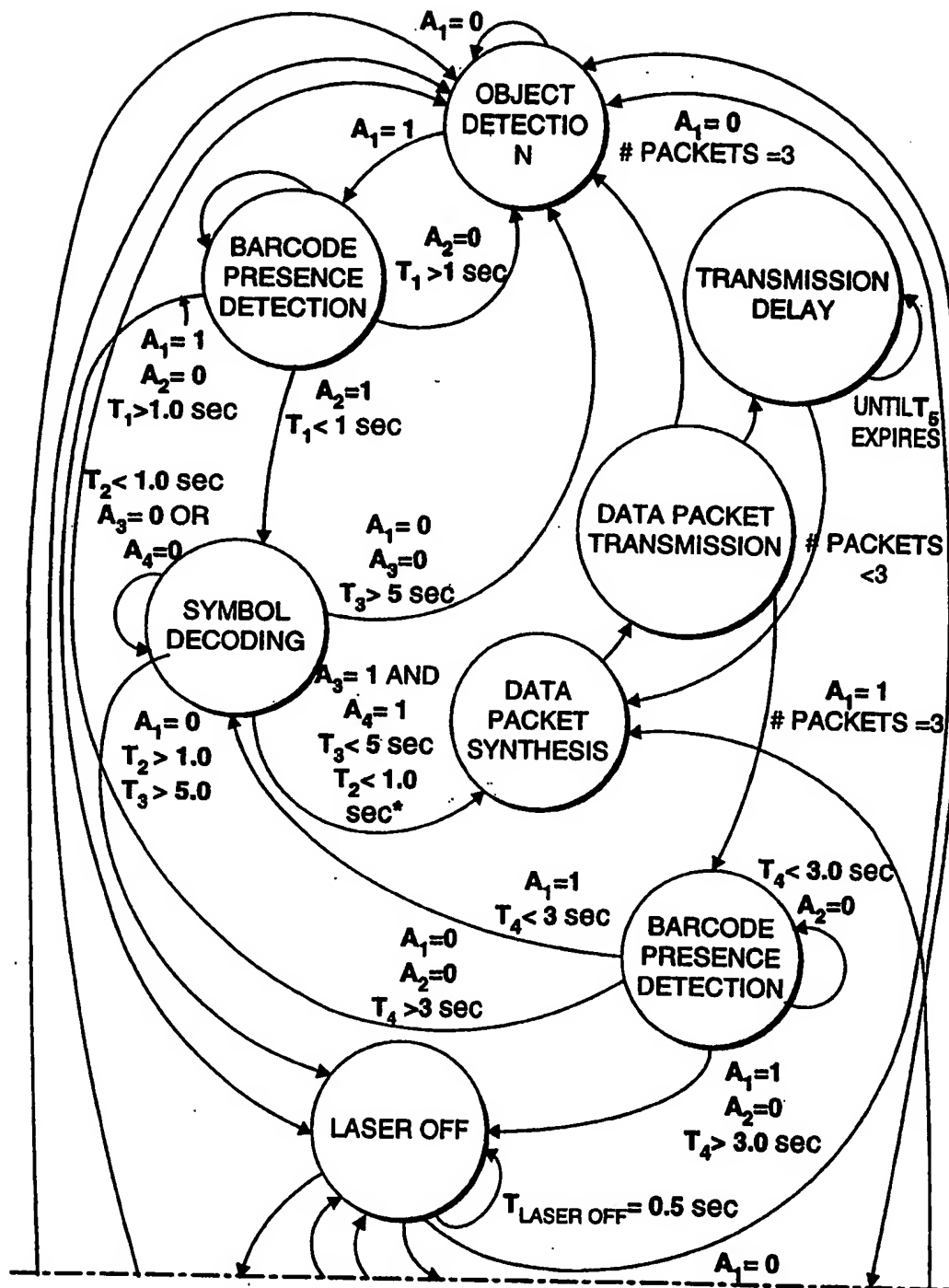
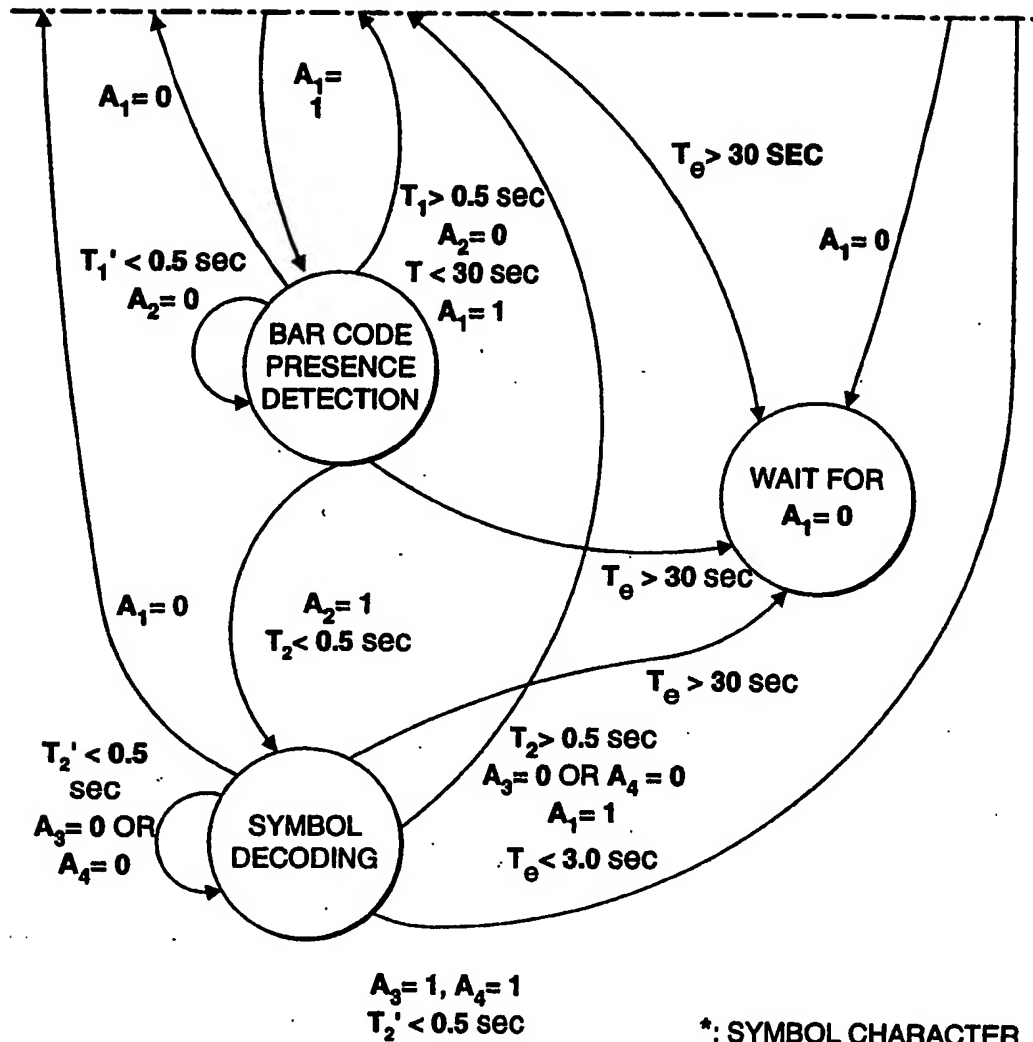


FIG. 31A



*: SYMBOL CHARACTER DATA IS DIFFERENT THAN DATA ELEMENT IN DECODED SYMBOL DATA BUFFER

FIG. 31B

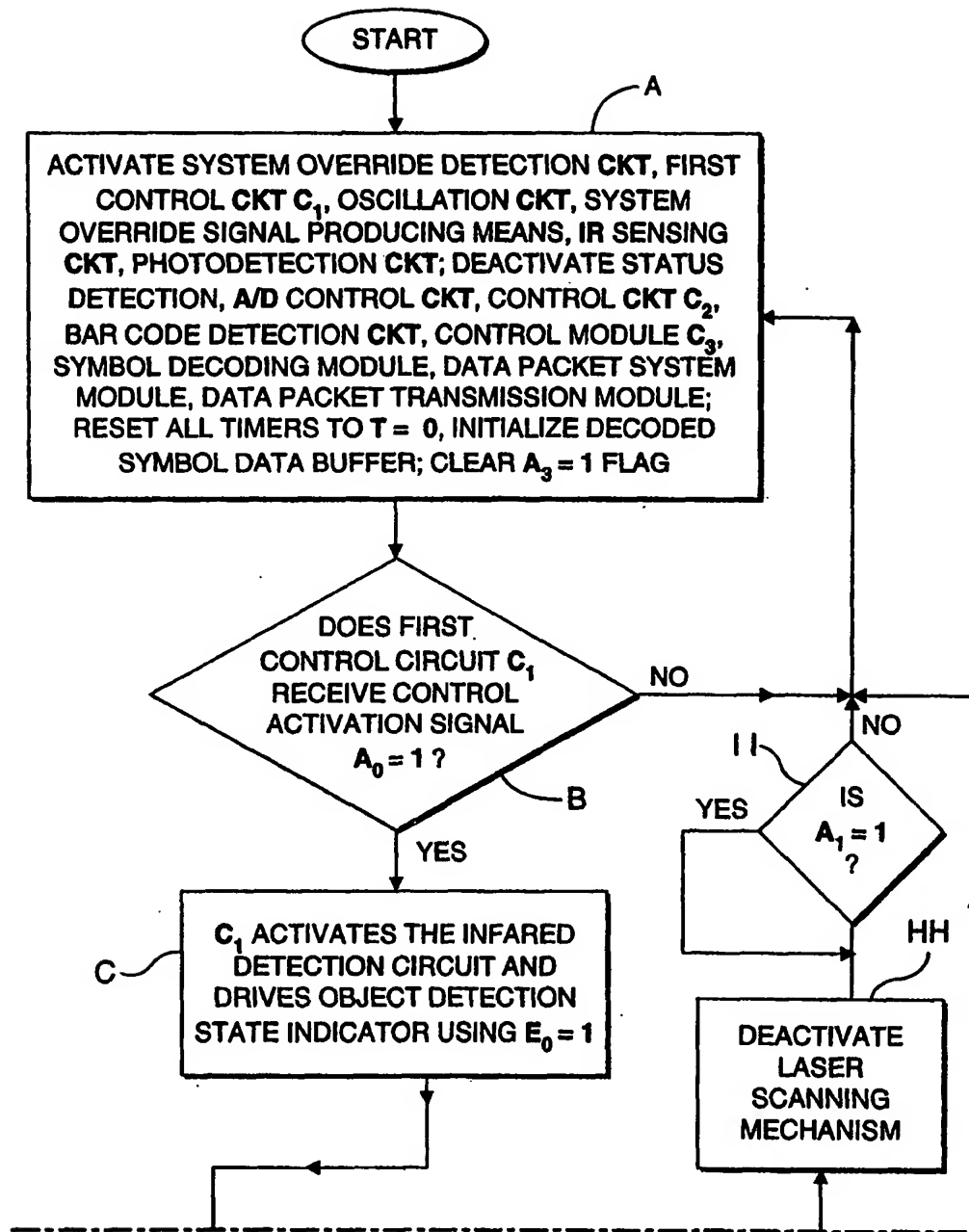


FIG. 32A1

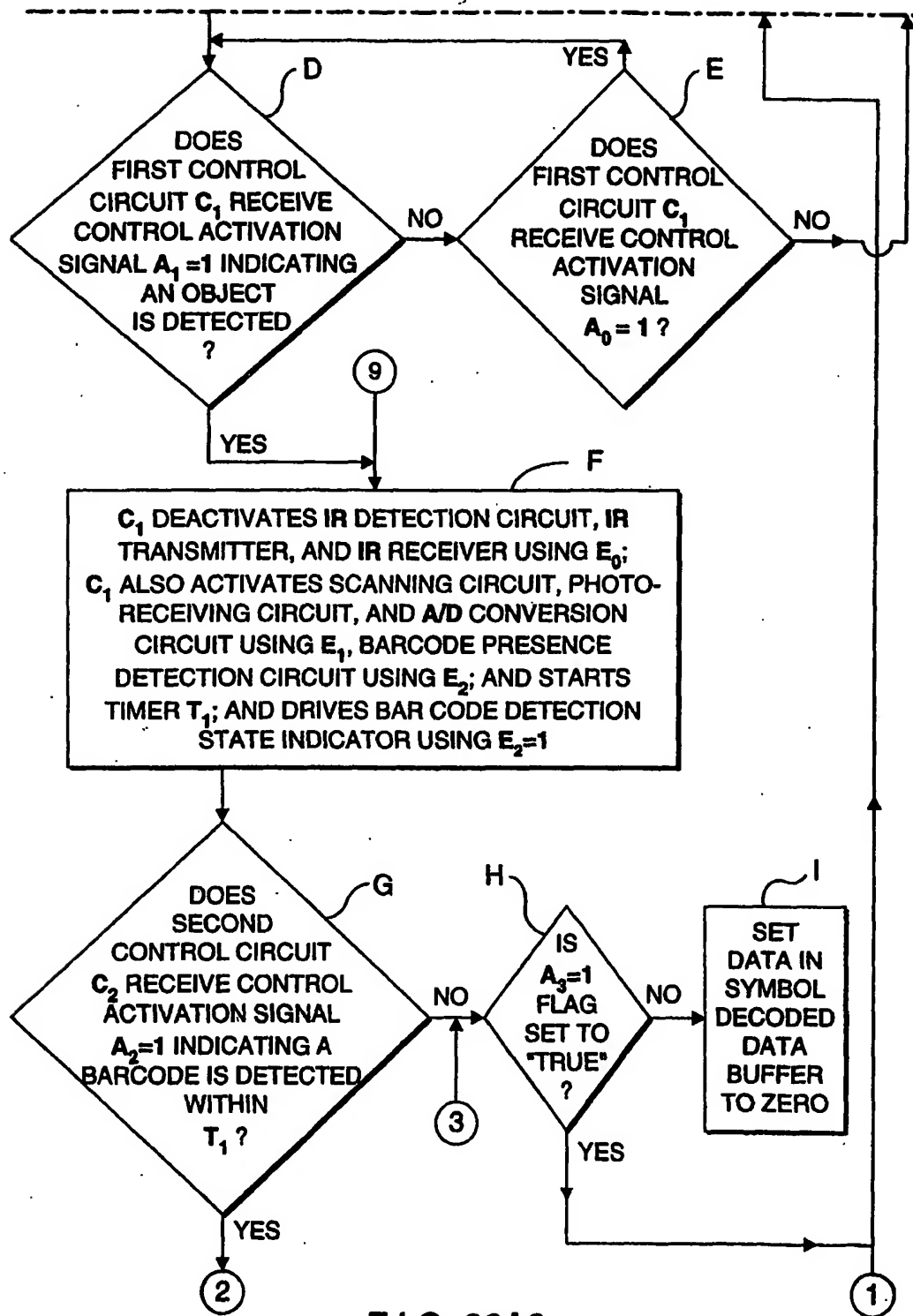
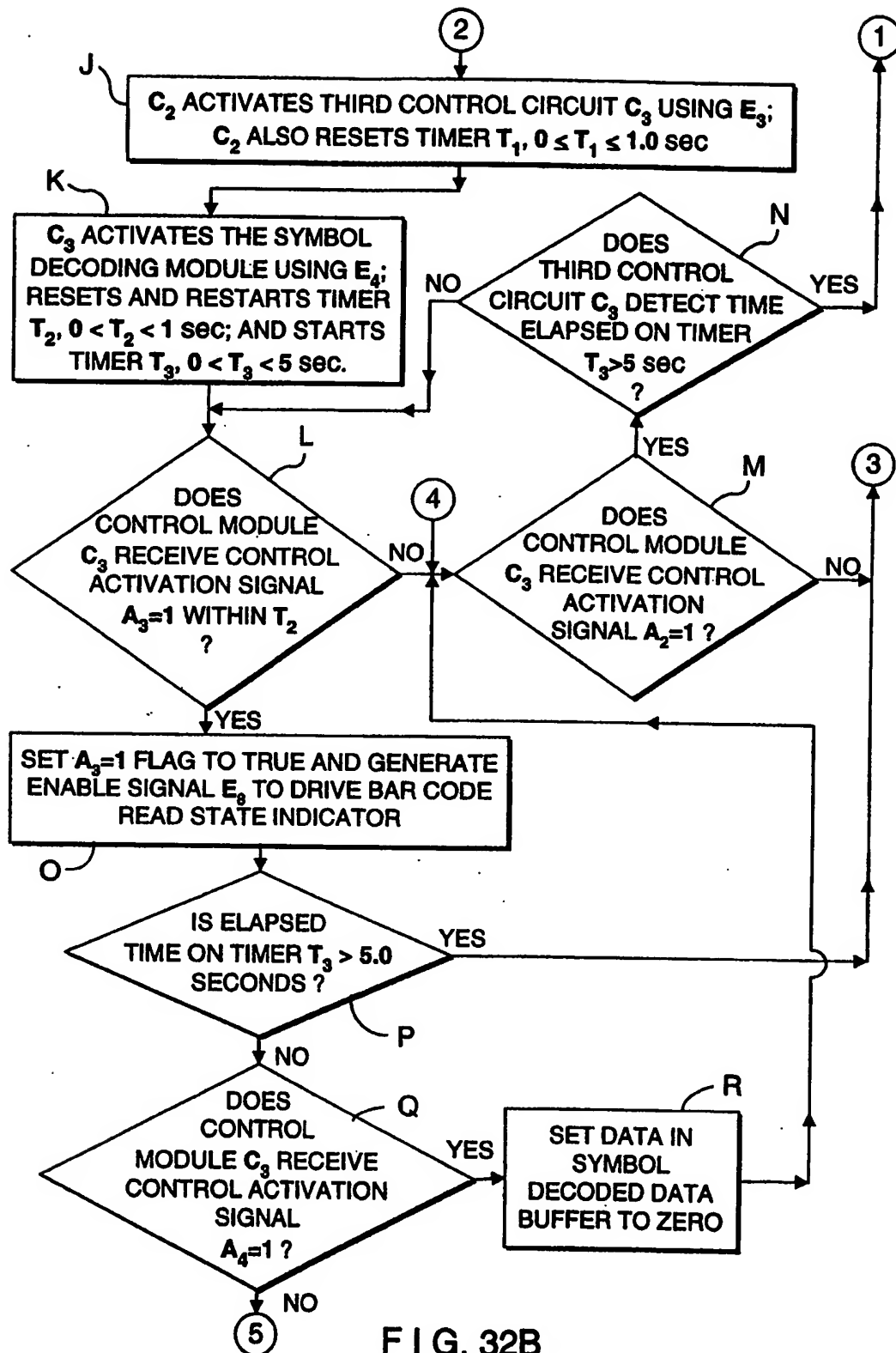


FIG. 32A2



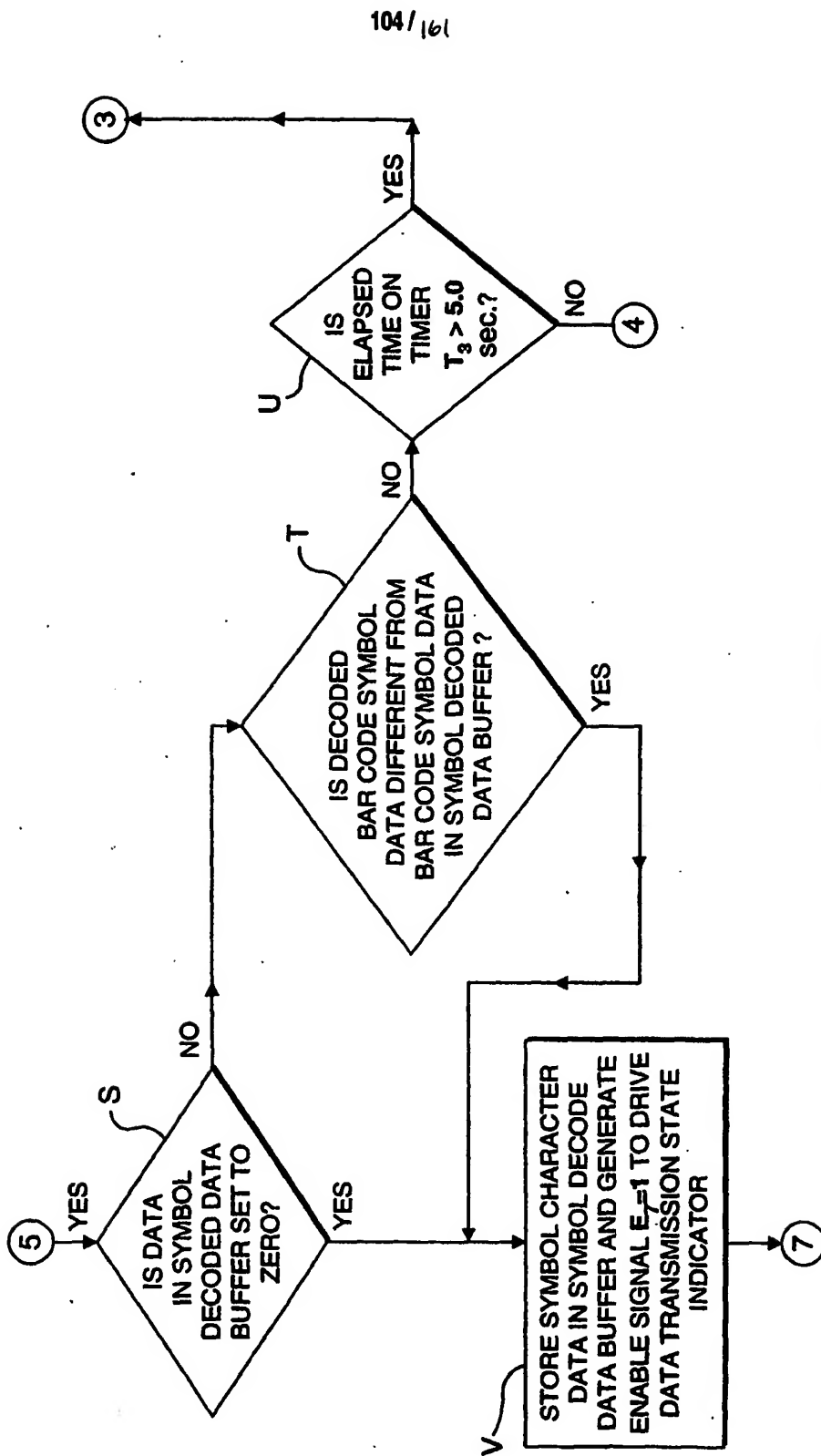


FIG. 32C

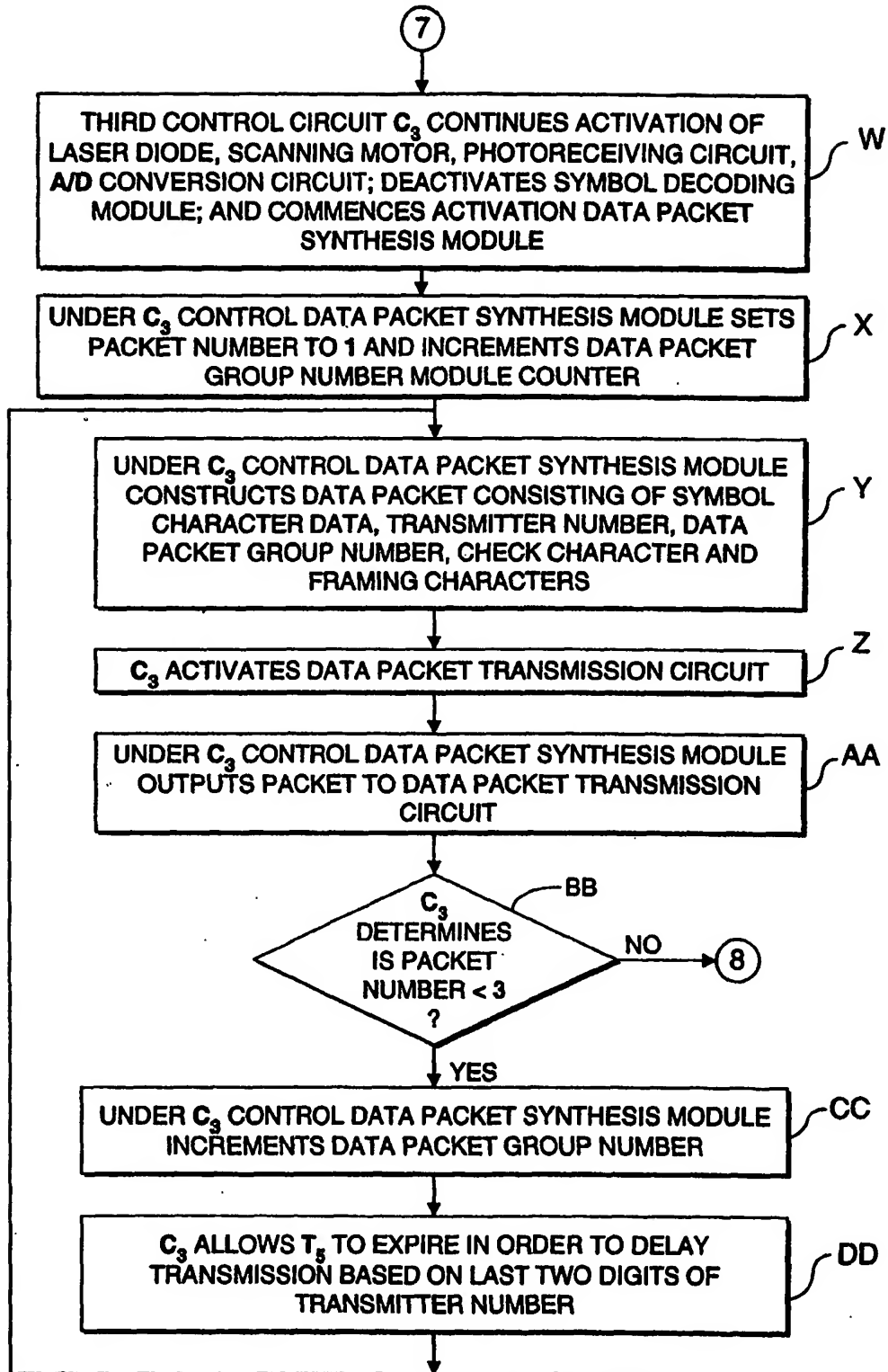


FIG. 32D

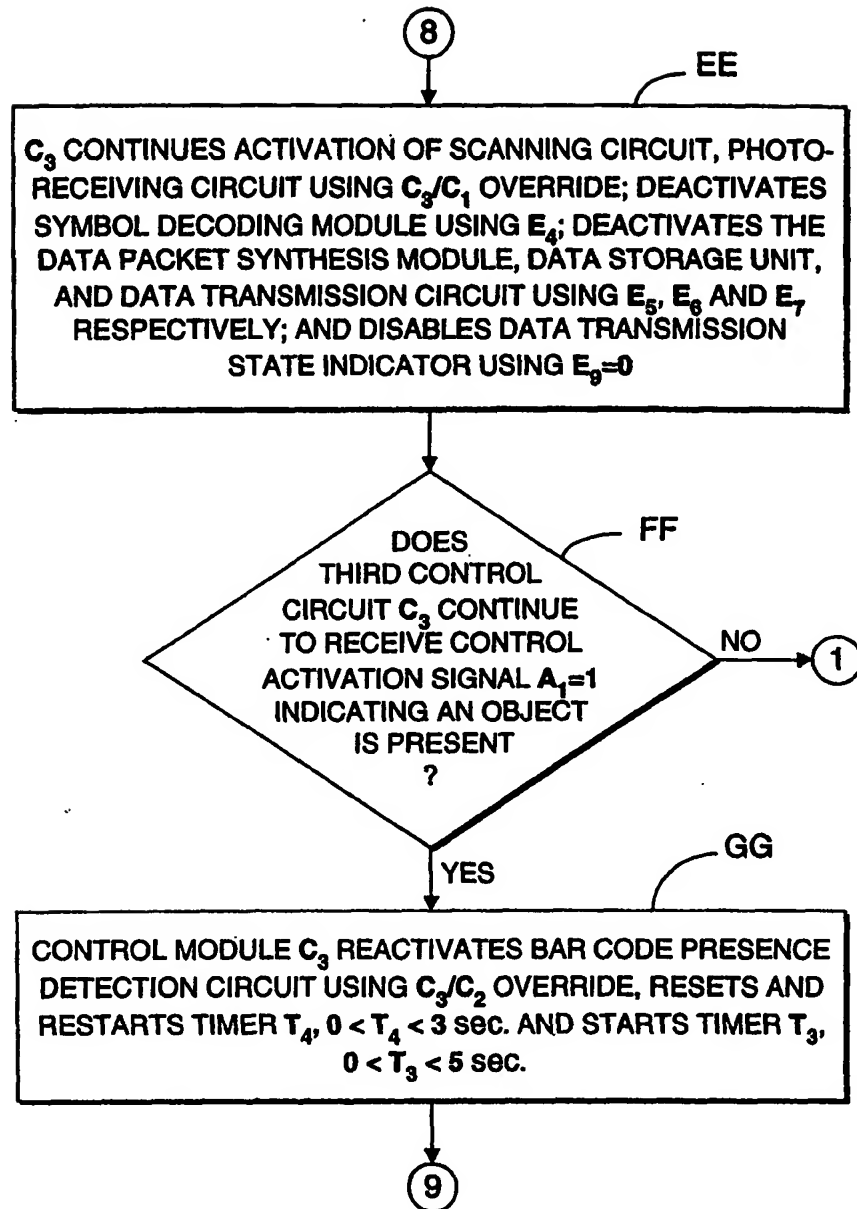


FIG. 32E

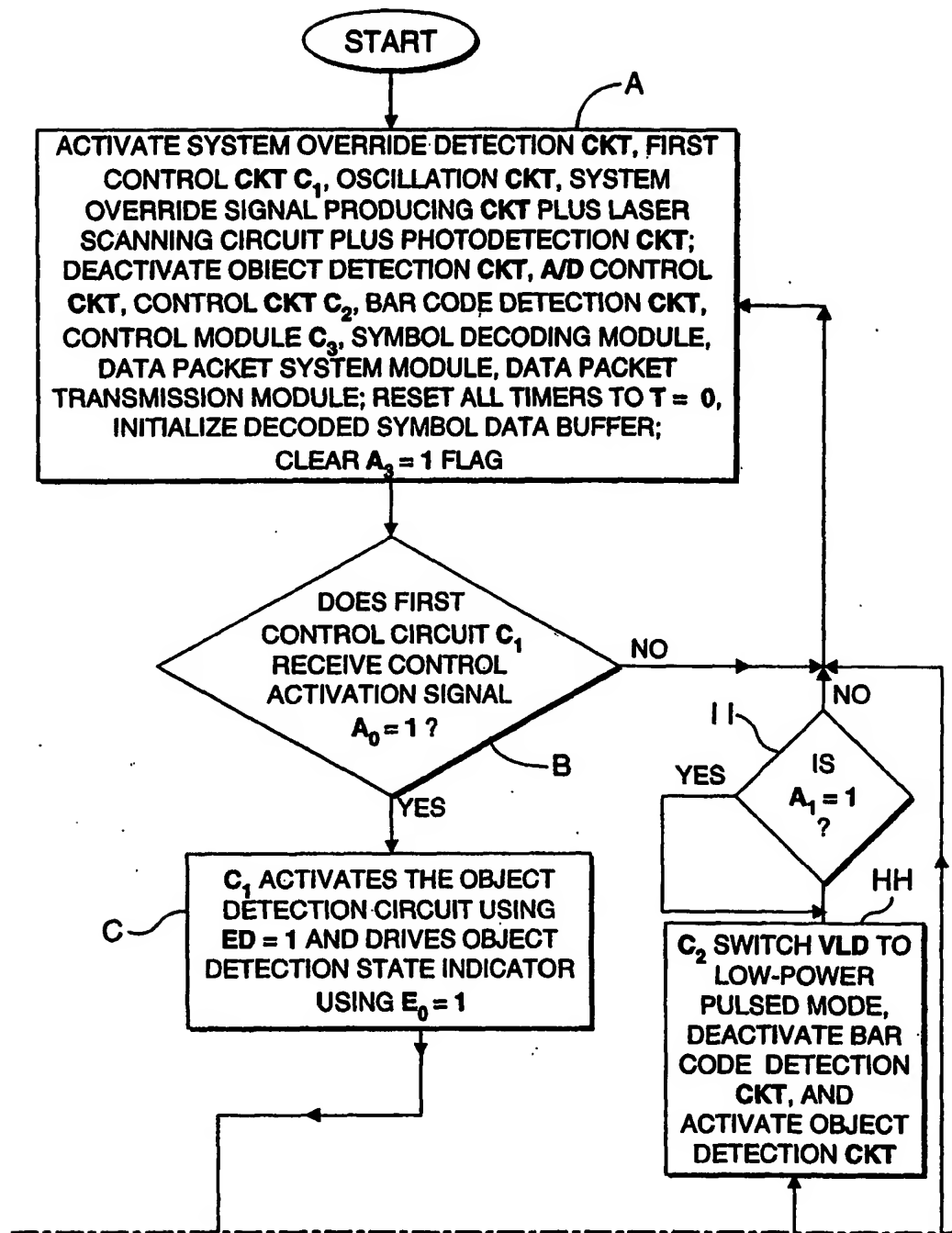


FIG. 33A1

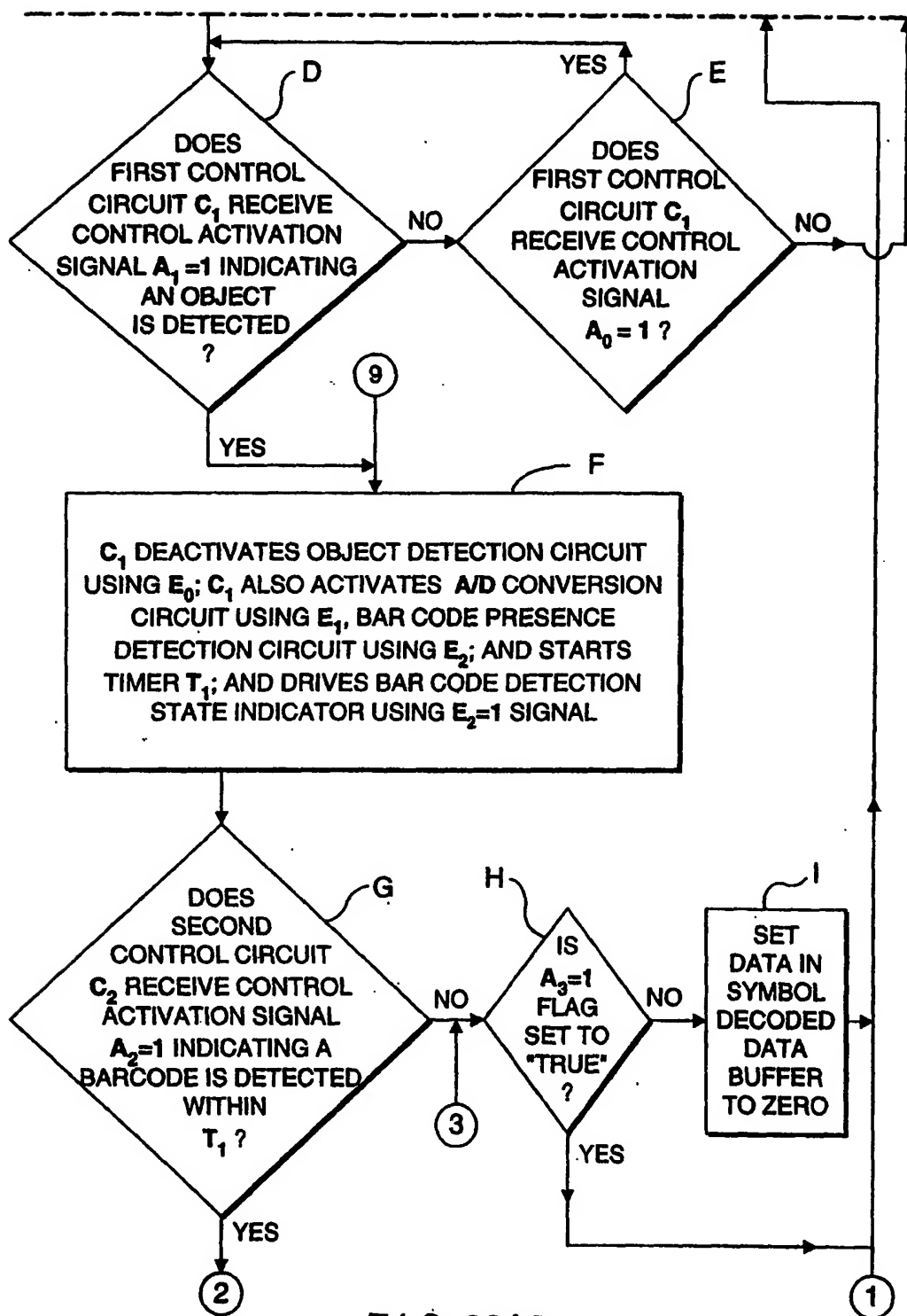


FIG. 33A2

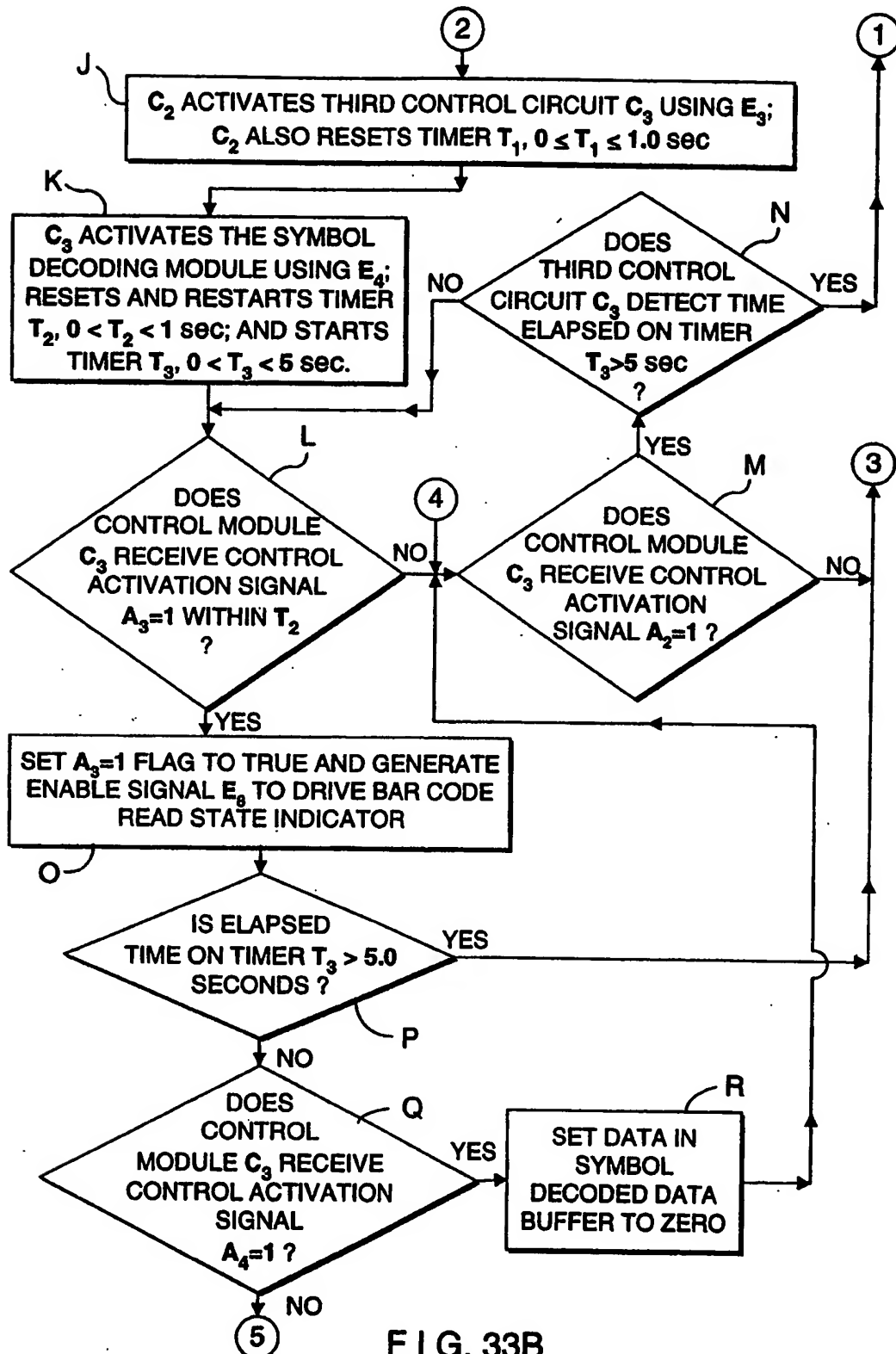


FIG. 33B

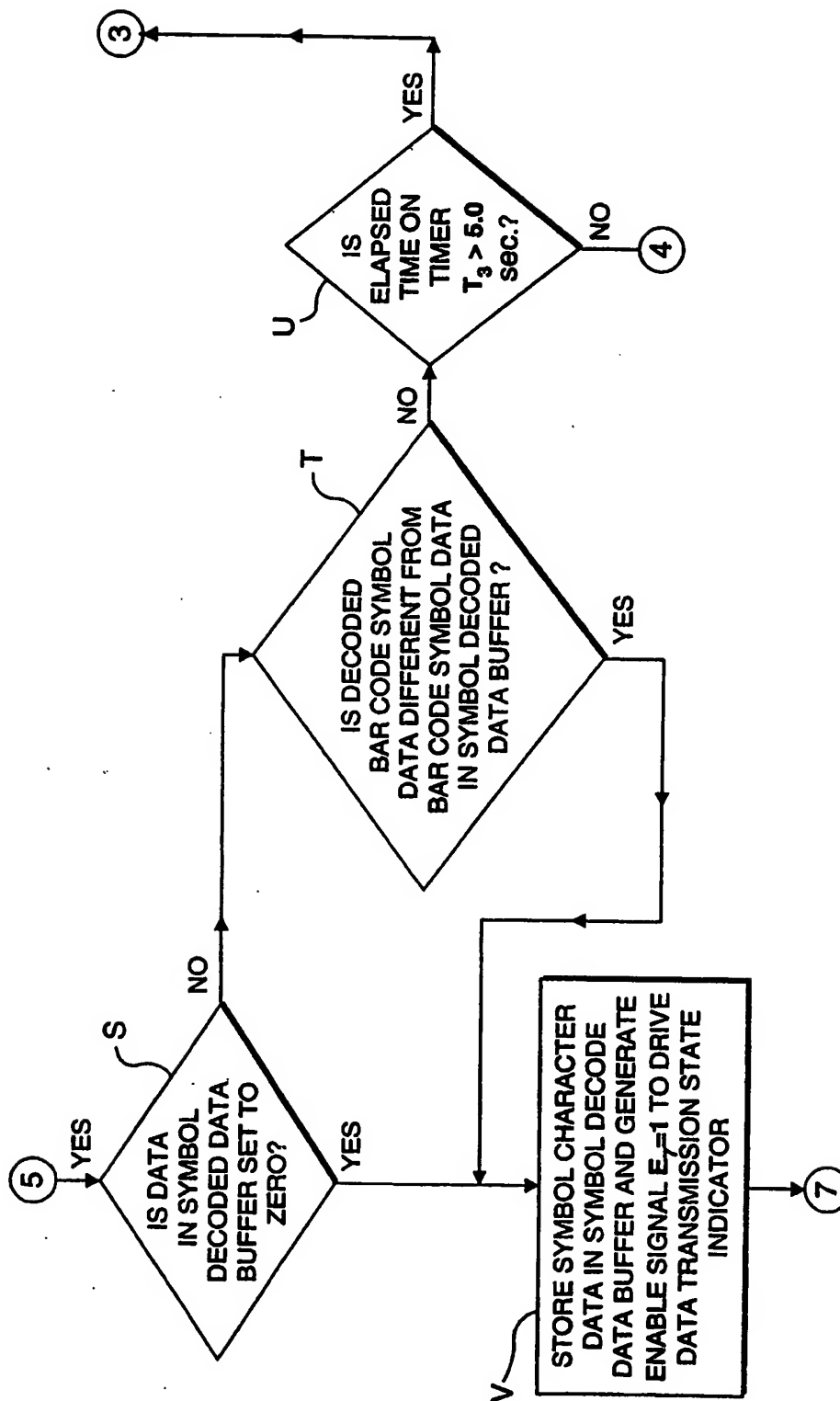


FIG. 33C

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7

THIRD CONTROL CIRCUIT C_3 CONTINUES ACTIVATION OF LASER DIODE, SCANNING MOTOR, PHOTORECEIVING CIRCUIT, A/D CONVERSION CIRCUIT; DEACTIVATES SYMBOL DECODING MODULE; AND COMMENCES ACTIVATION DATA PACKET SYNTHESIS MODULE

W

UNDER C_3 CONTROL DATA PACKET SYNTHESIS MODULE SETS PACKET NUMBER TO 1 AND INCREMENTS DATA PACKET GROUP NUMBER MODULE COUNTER

X

UNDER C_3 CONTROL DATA PACKET SYNTHESIS MODULE CONSTRUCTS DATA PACKET CONSISTING OF SYMBOL CHARACTER DATA, TRANSMITTER NUMBER, DATA PACKET GROUP NUMBER, CHECK CHARACTER AND FRAMING CHARACTERS

Y

C_3 ACTIVATES DATA PACKET TRANSMISSION CIRCUIT

Z

UNDER C_3 CONTROL DATA PACKET SYNTHESIS MODULE OUTPUTS PACKET TO DATA PACKET TRANSMISSION CIRCUIT

AA

C_3 DETERMINES IS PACKET NUMBER < 3 ?

BB

NO

8

YES

UNDER C_3 CONTROL DATA PACKET SYNTHESIS MODULE INCREMENTS DATA PACKET GROUP NUMBER

CC

C_3 ALLOWS T_5 TO EXPIRE IN ORDER TO DELAY TRANSMISSION BASED ON LAST TWO DIGITS OF TRANSMITTER NUMBER

DD

FIG. 33D

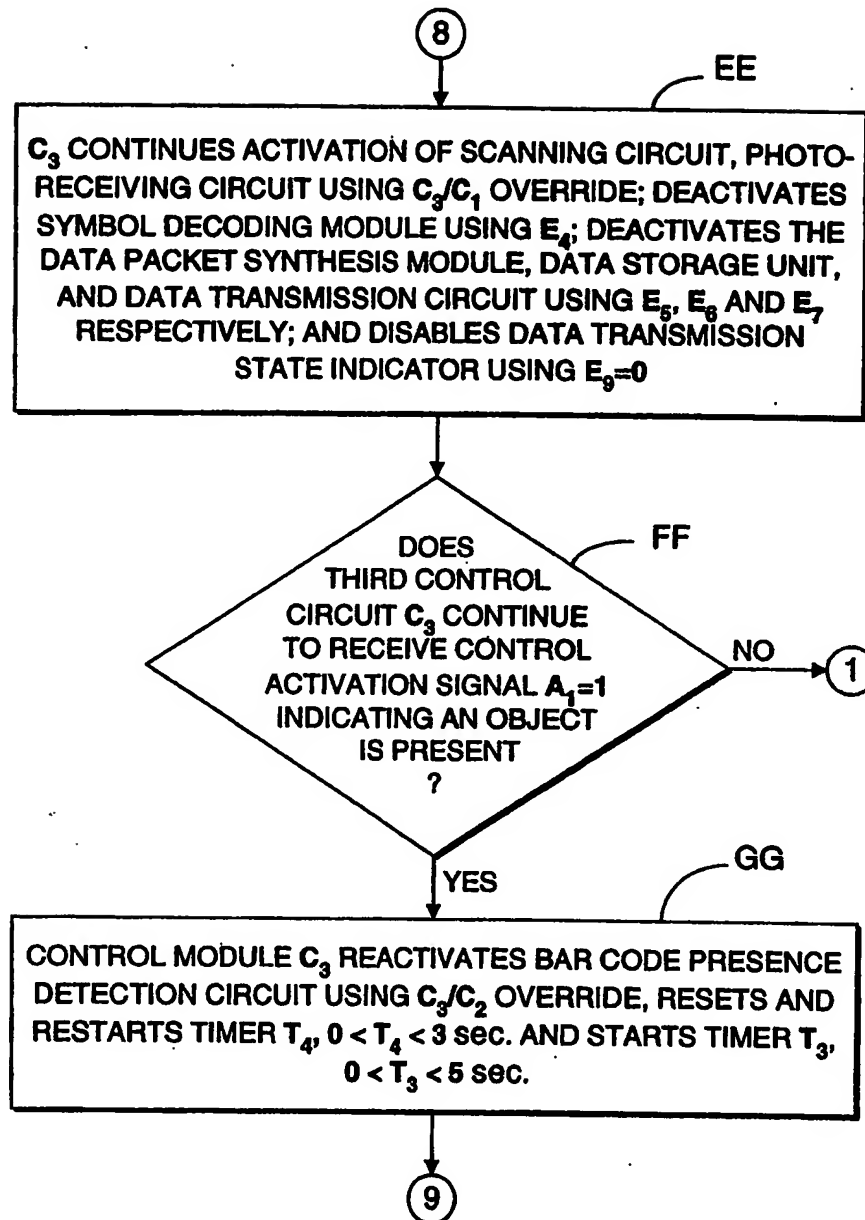


FIG. 33E

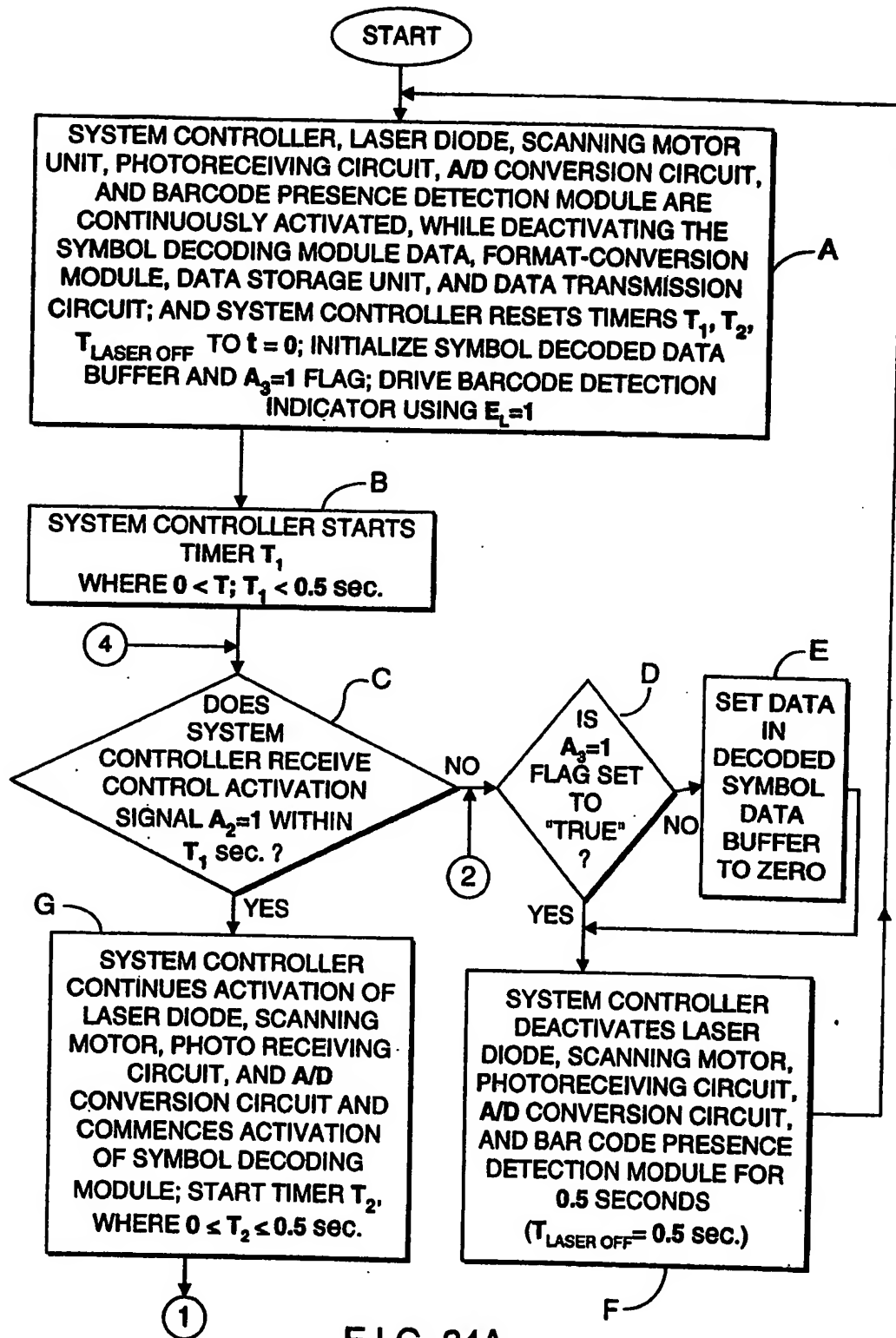


FIG. 34A

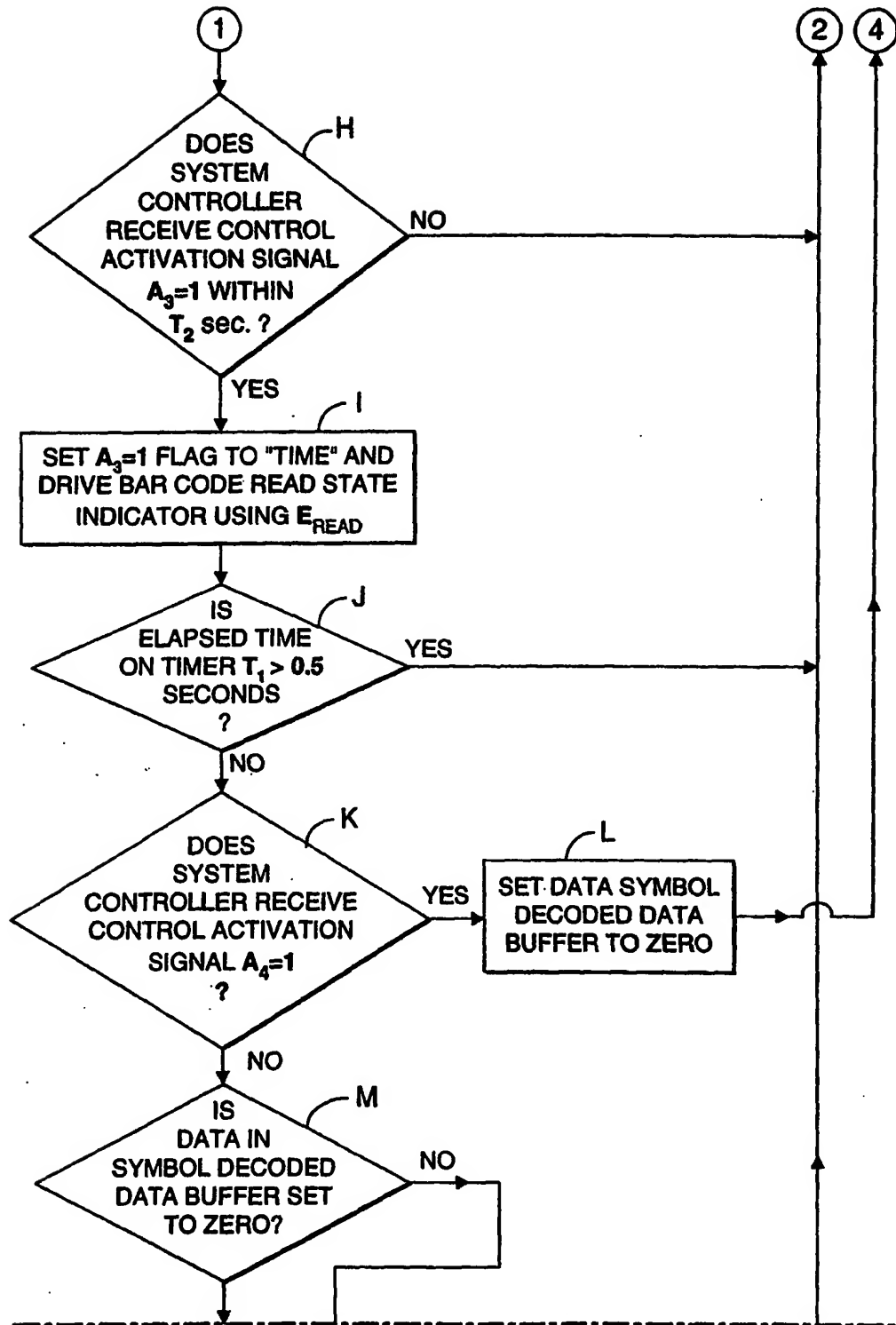


FIG. 34B1

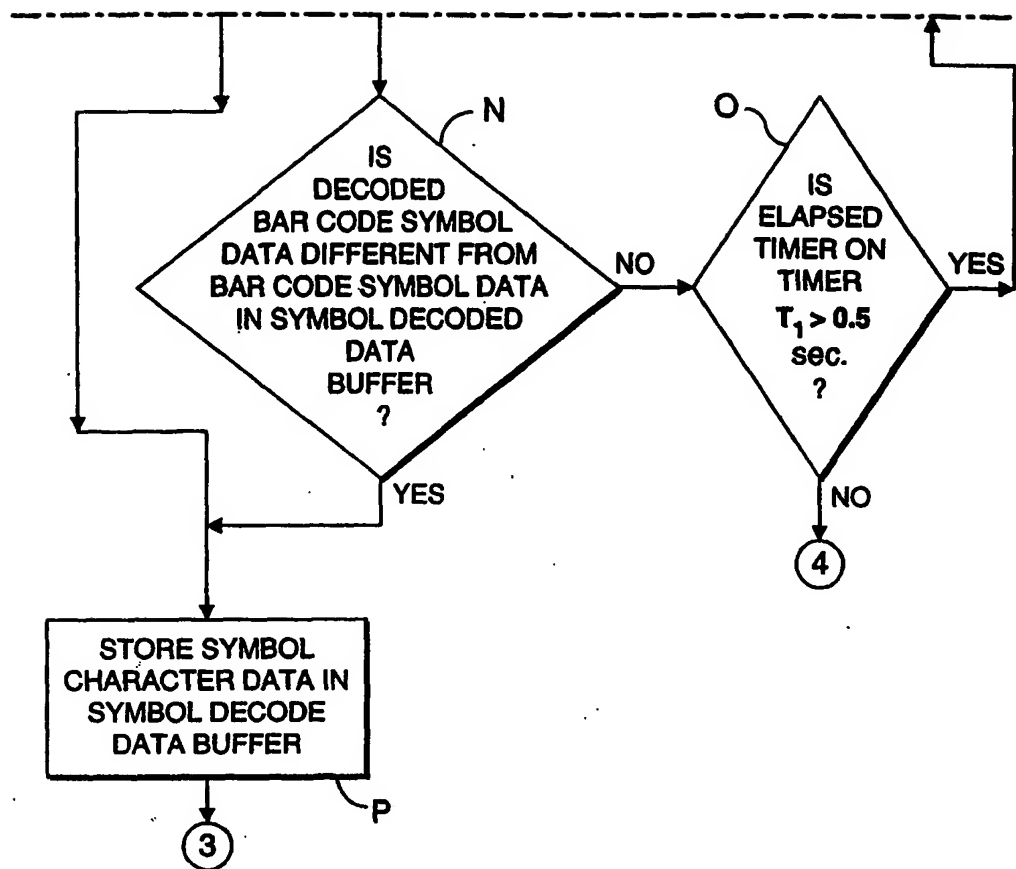


FIG. 34B2

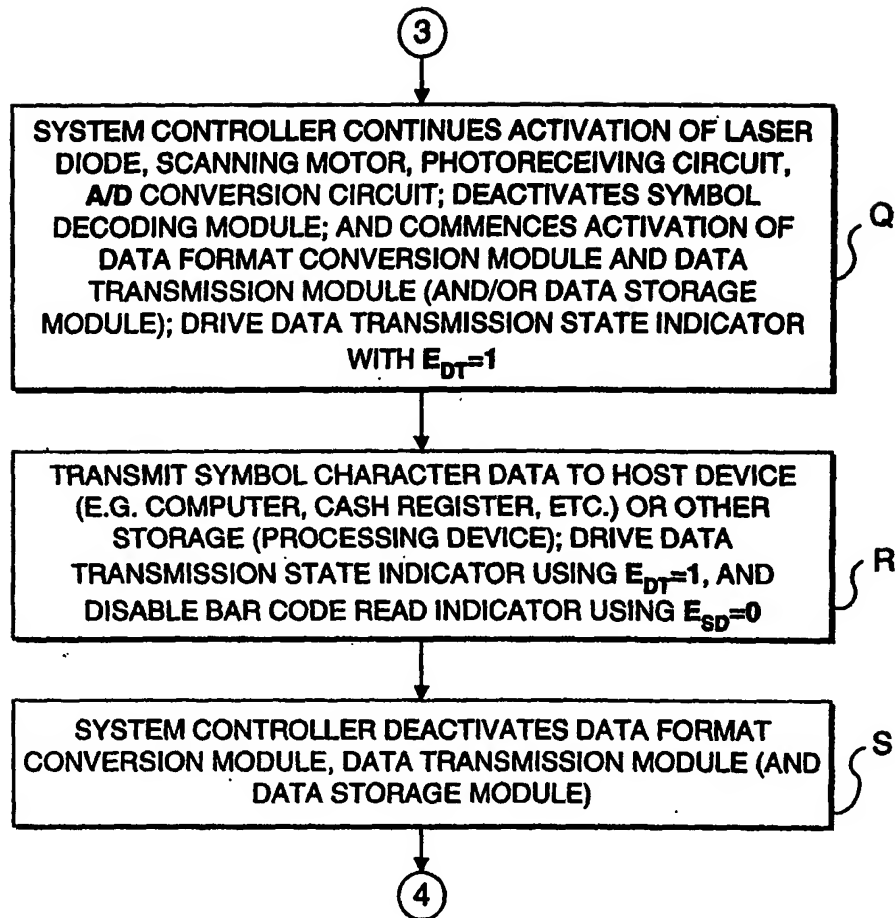


FIG. 34C

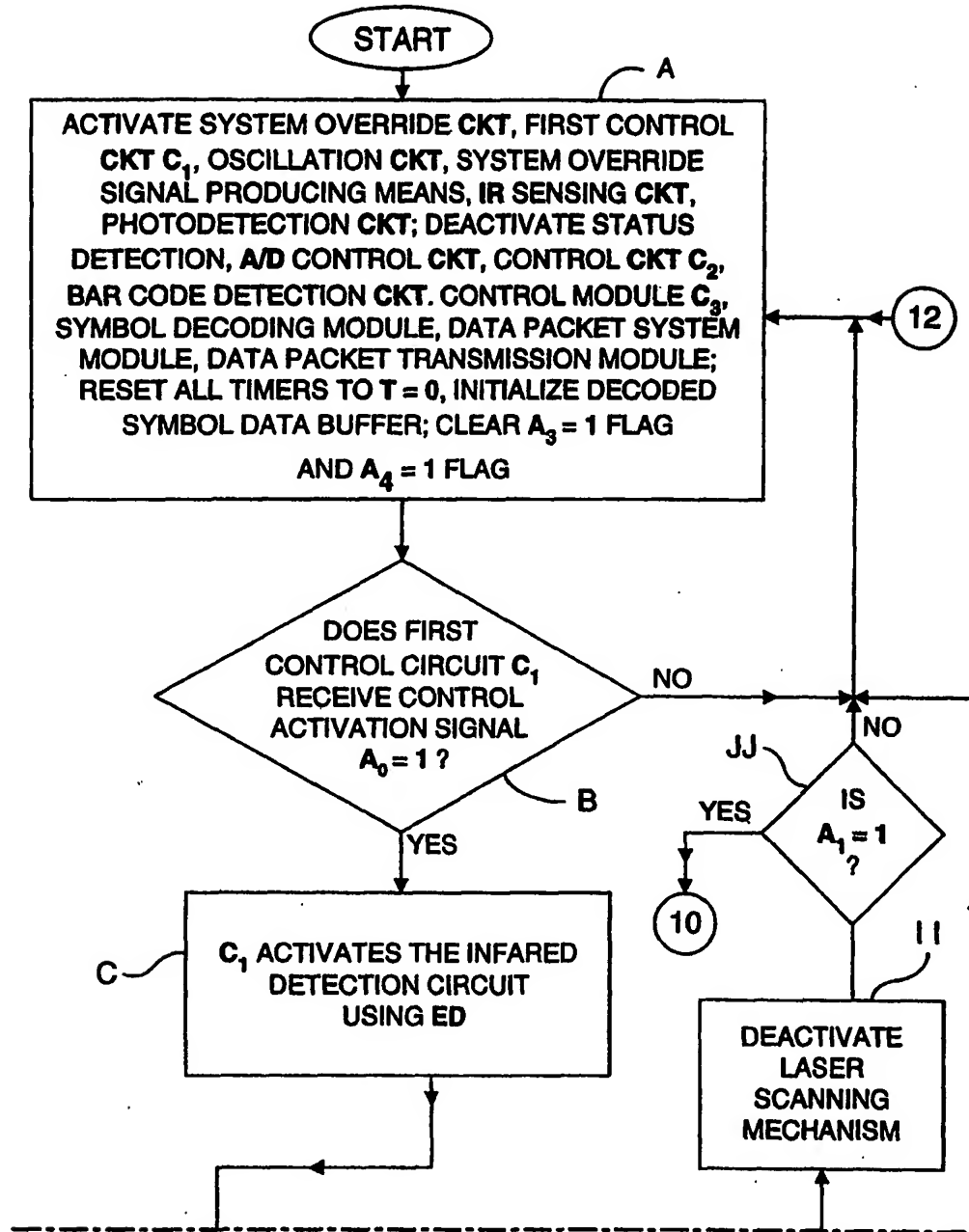


FIG. 35A1

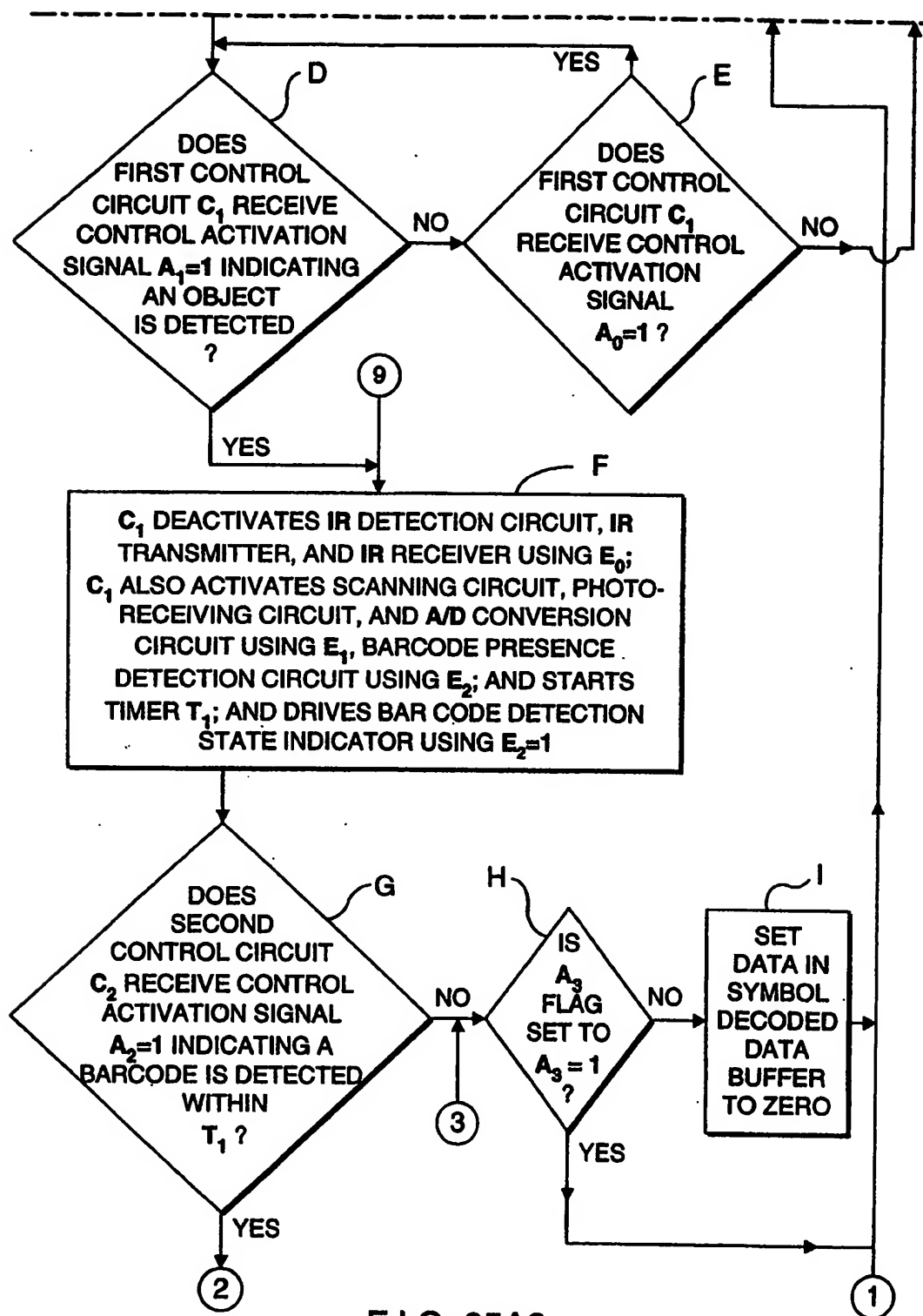
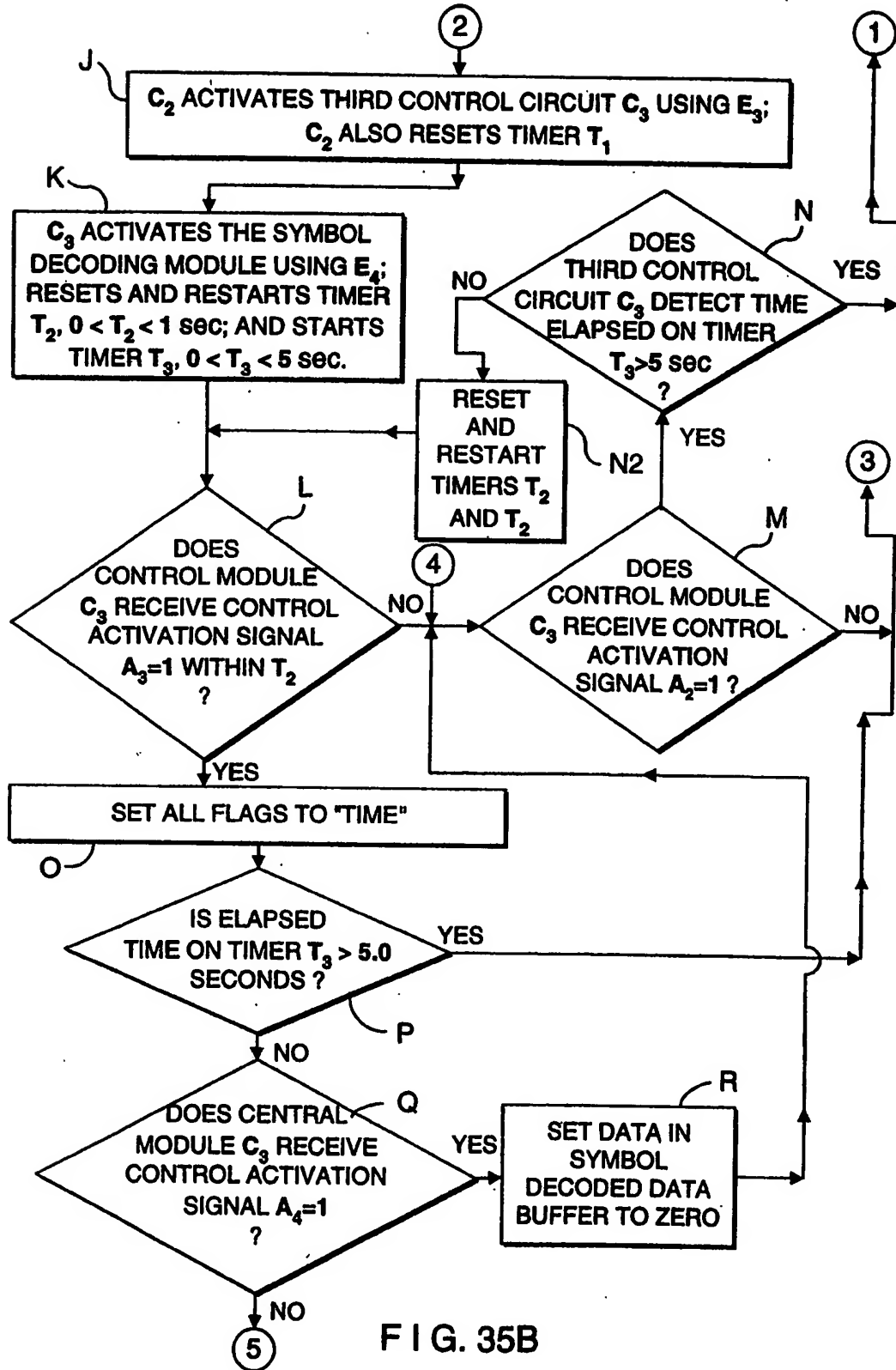


FIG. 35A2



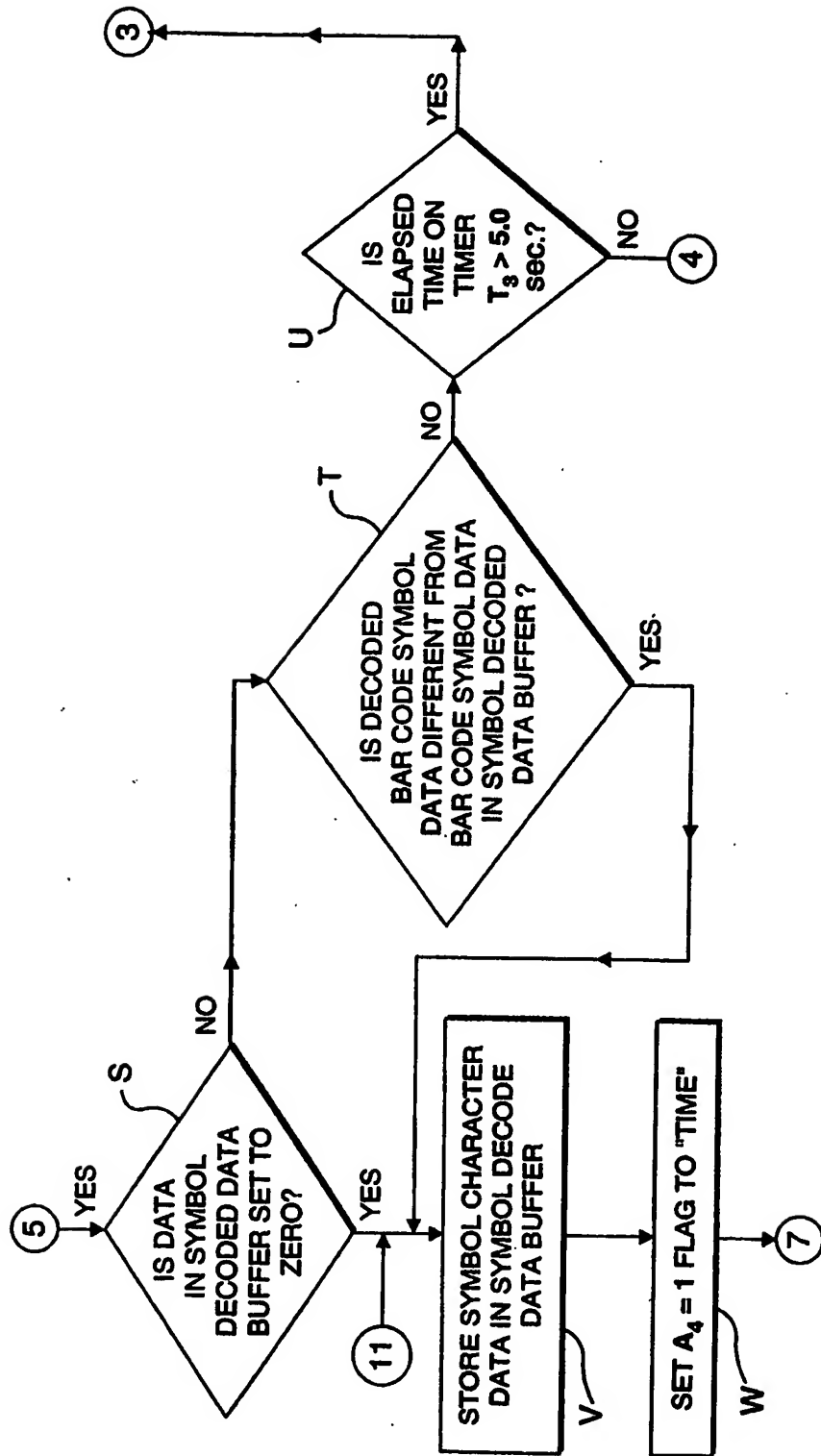


FIG. 35C

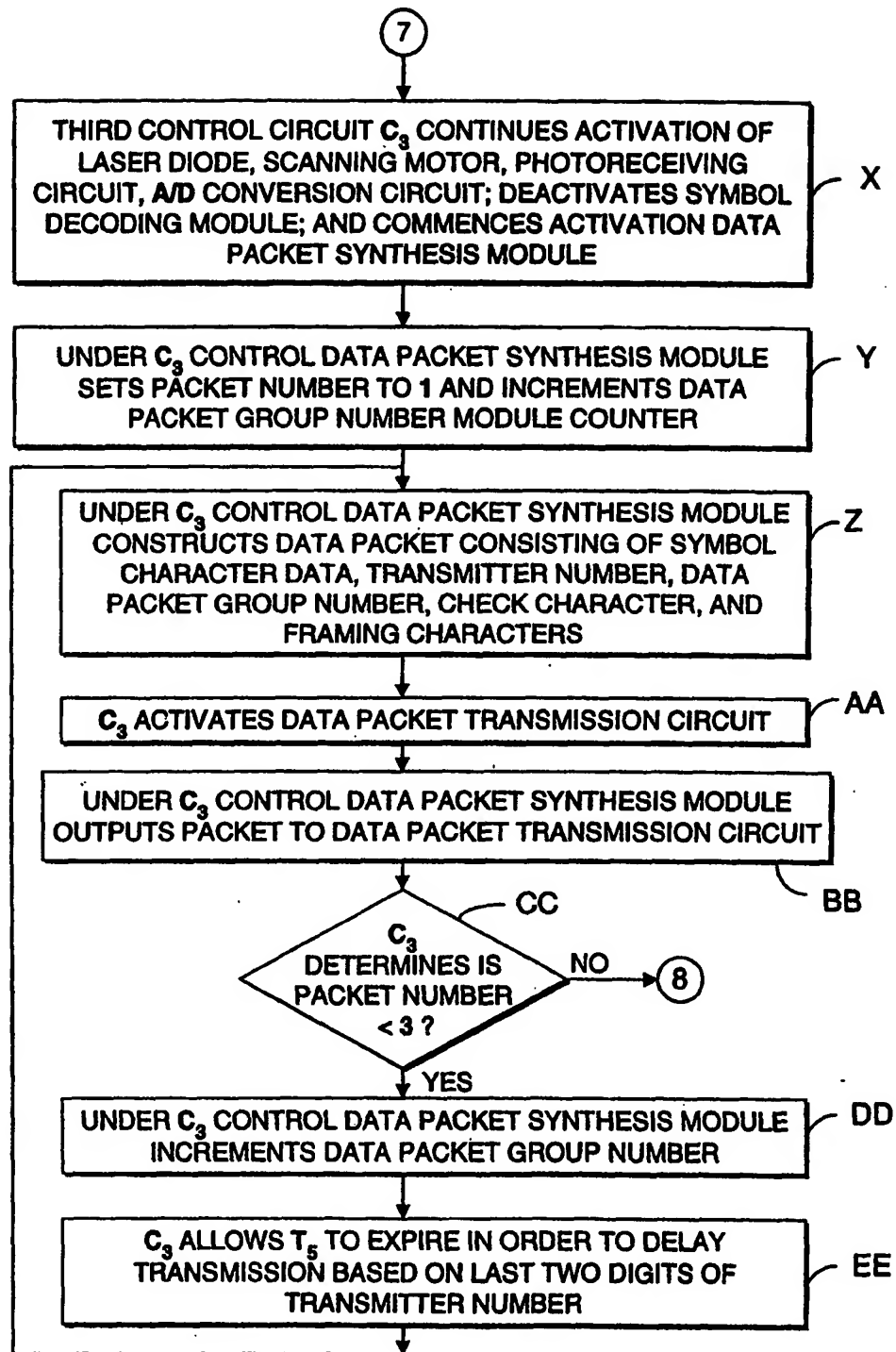


FIG. 35D

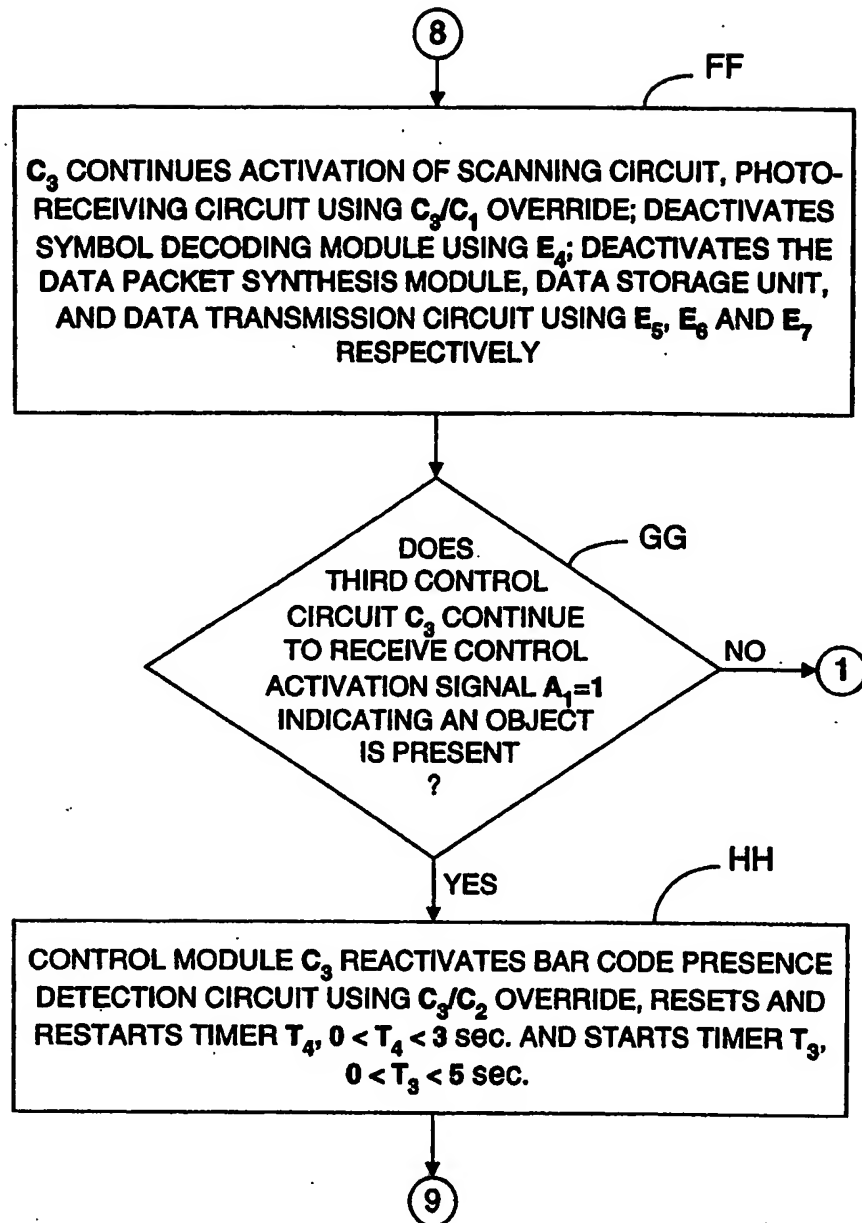


FIG. 35E

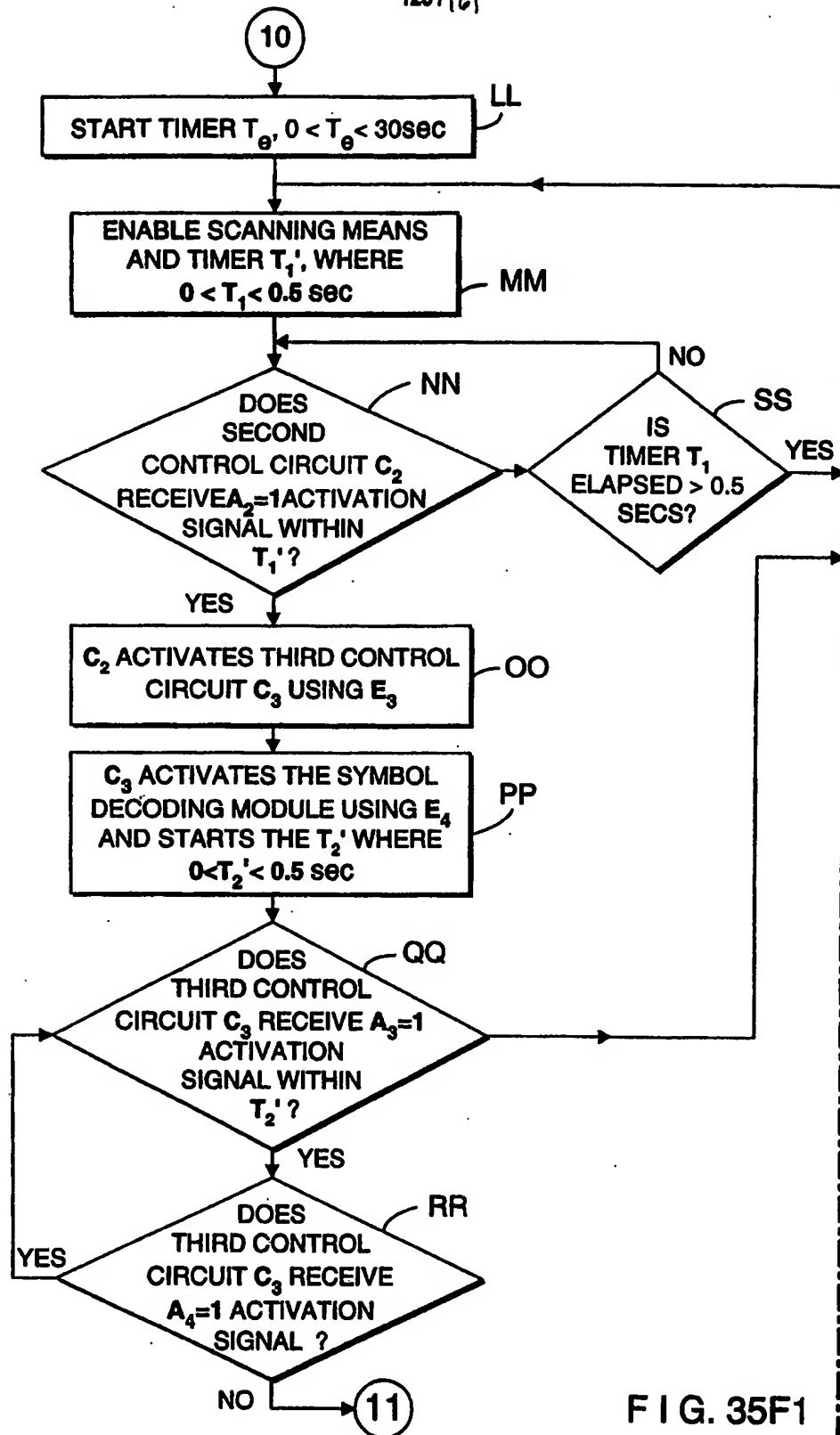
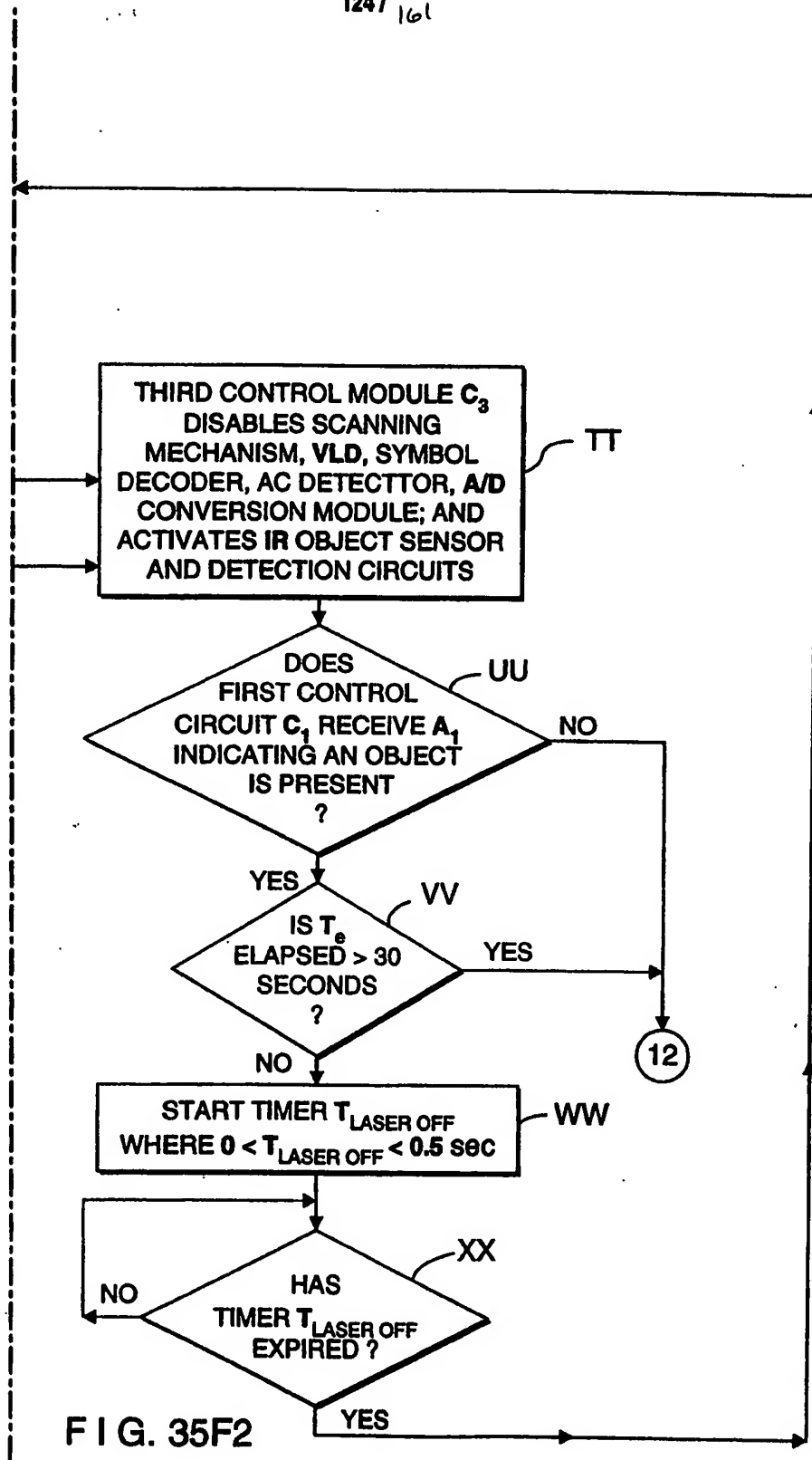
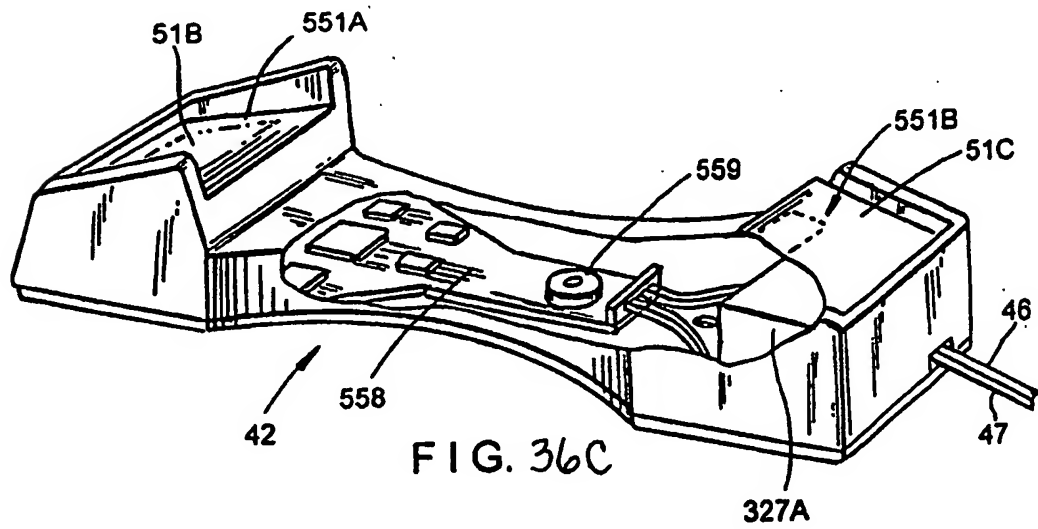
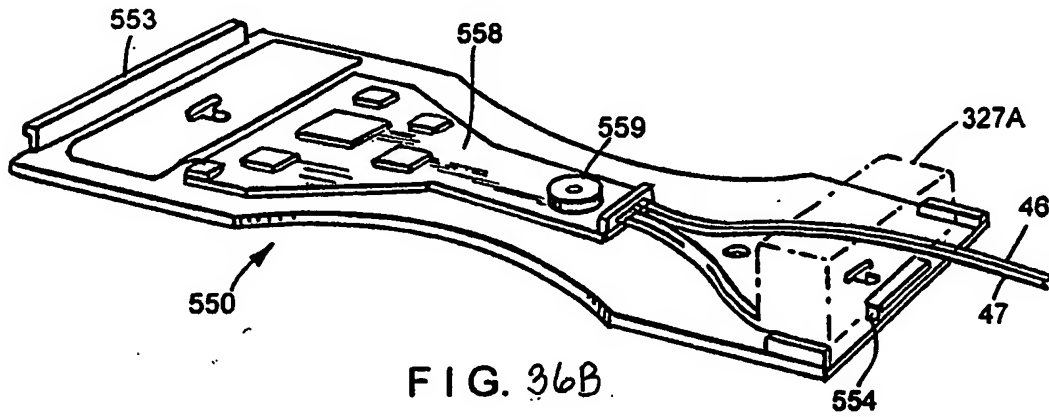
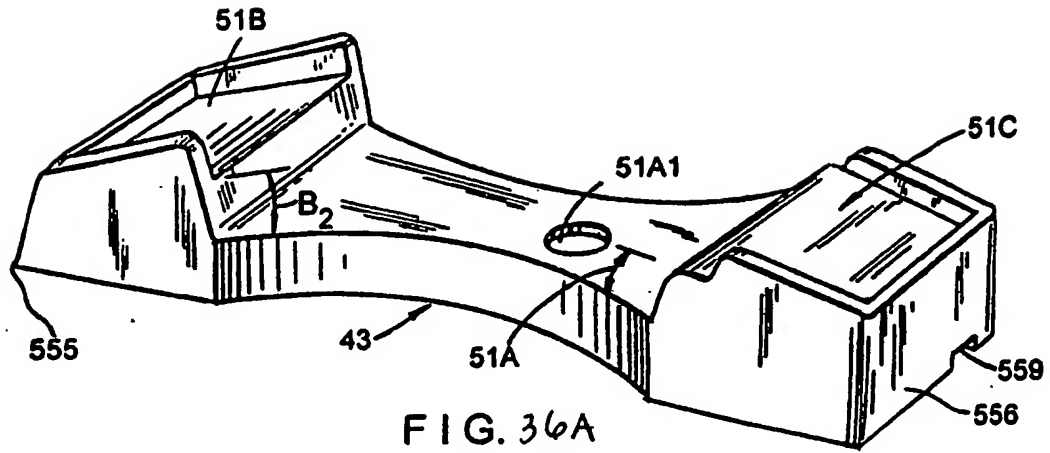


FIG. 35F1



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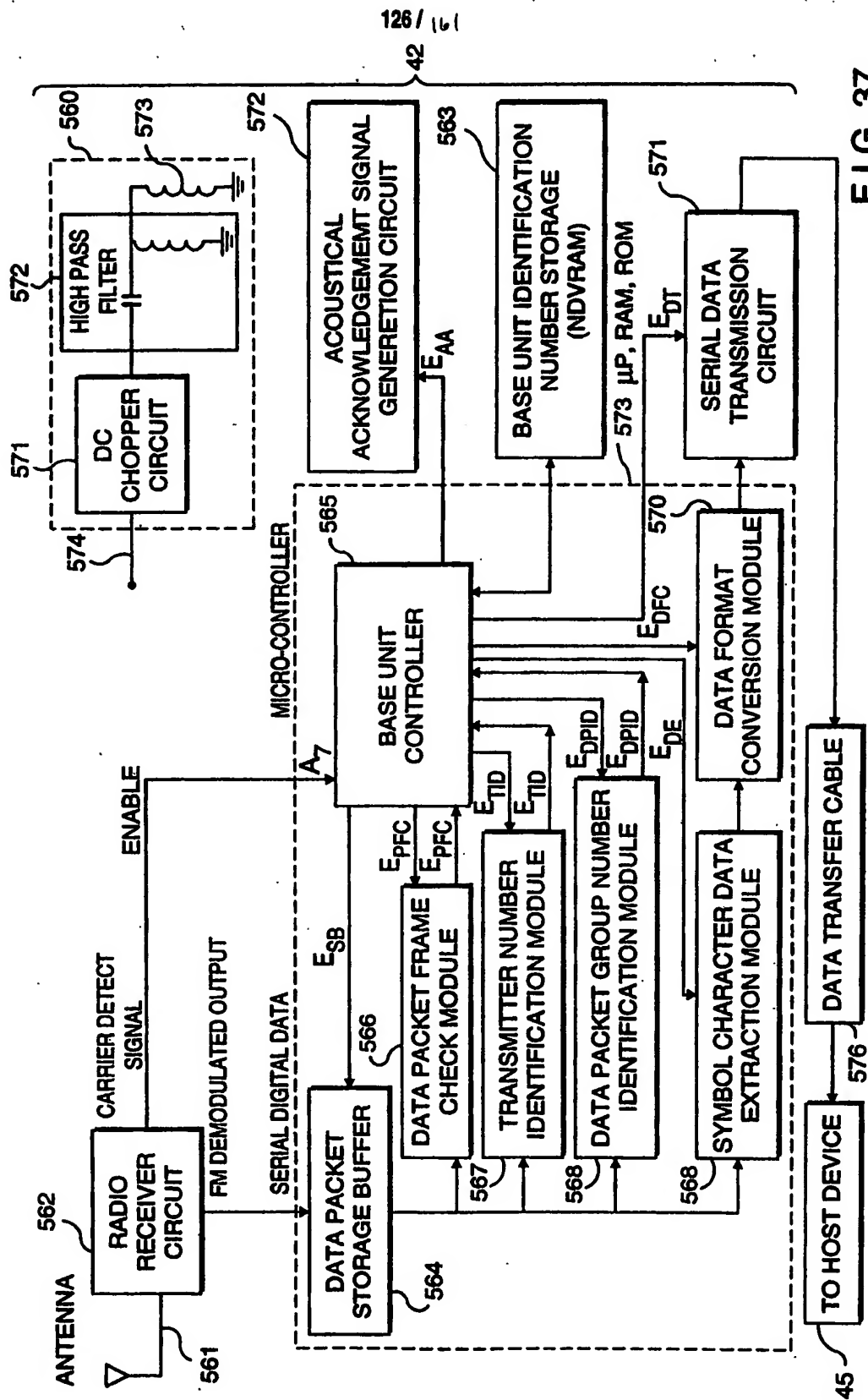


FIG. 37

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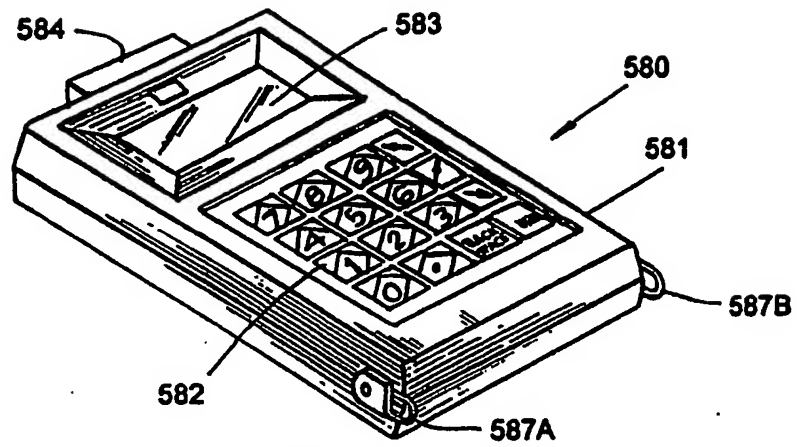


FIG. 38A

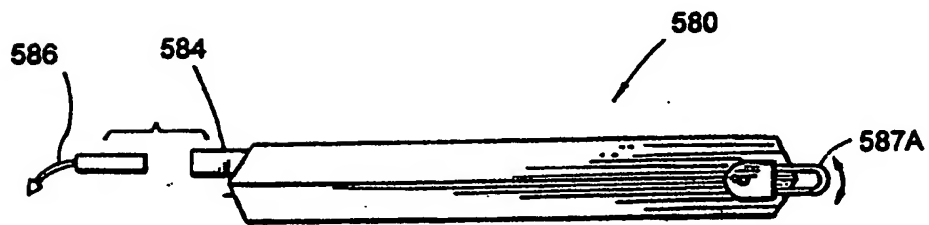


FIG. 38B

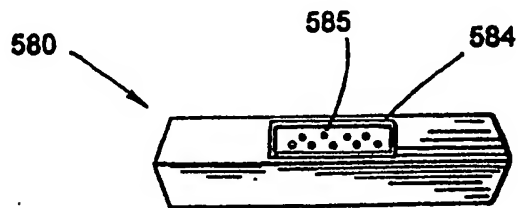


FIG. 38C

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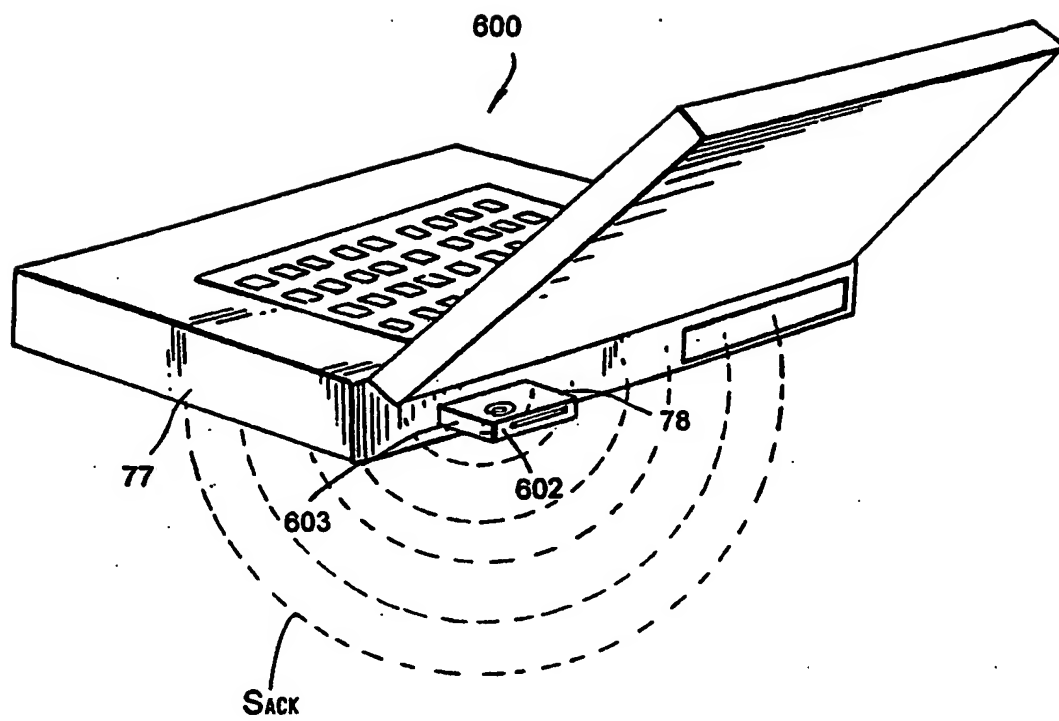
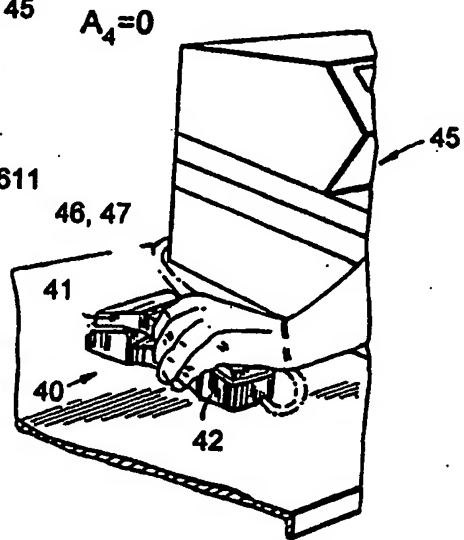
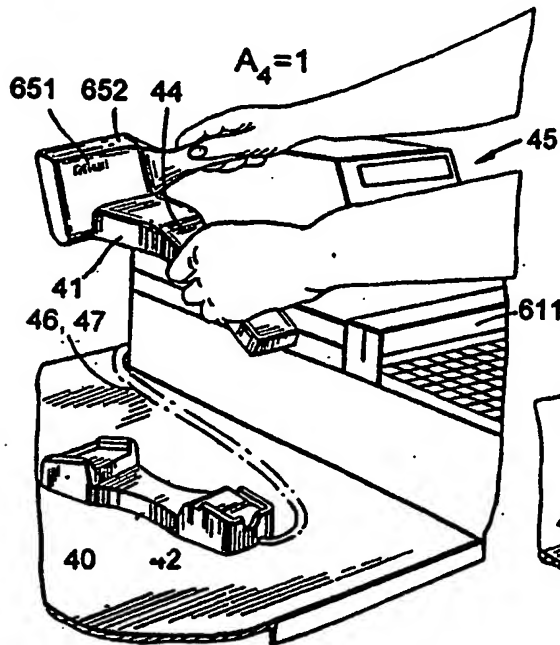
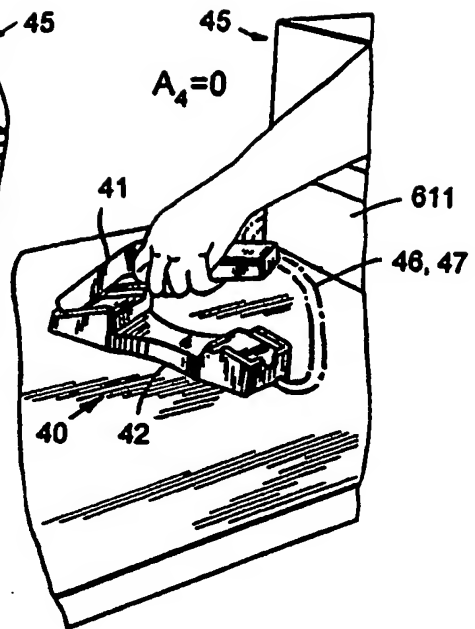
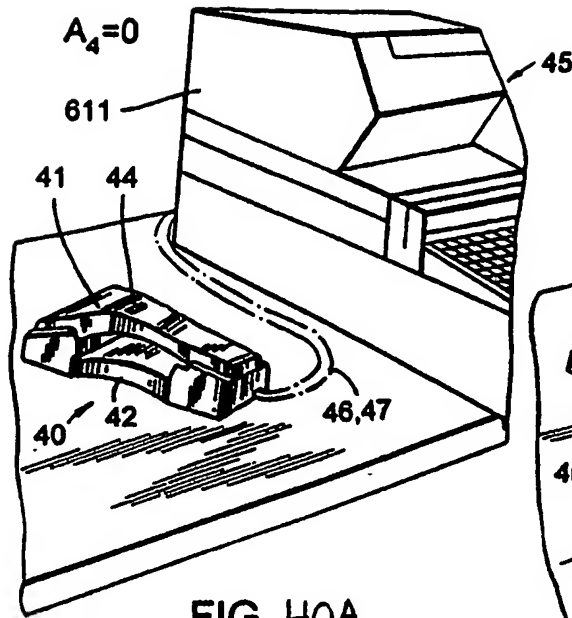


FIG. 39

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$A_4=1$

$A_4=0$

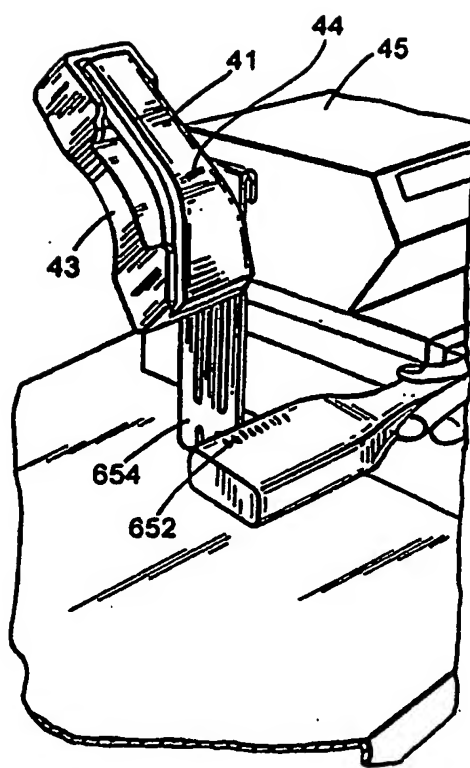


FIG. 41A

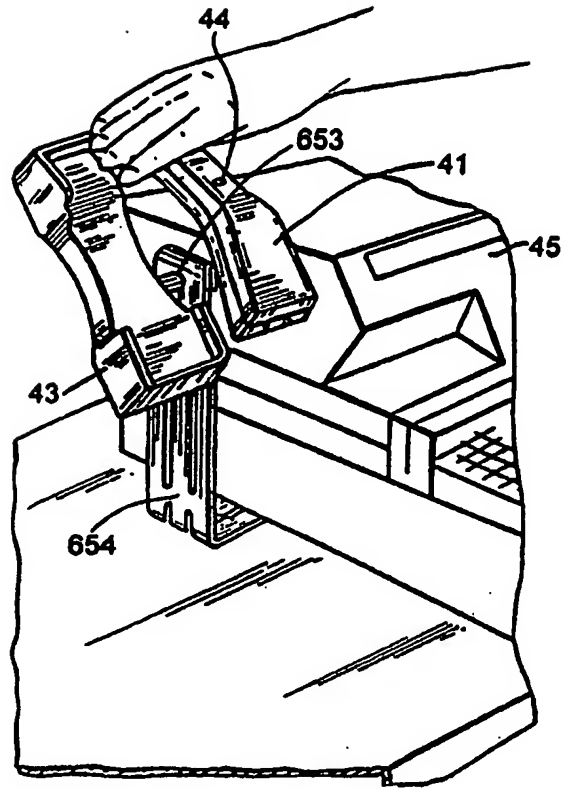


FIG. 41B

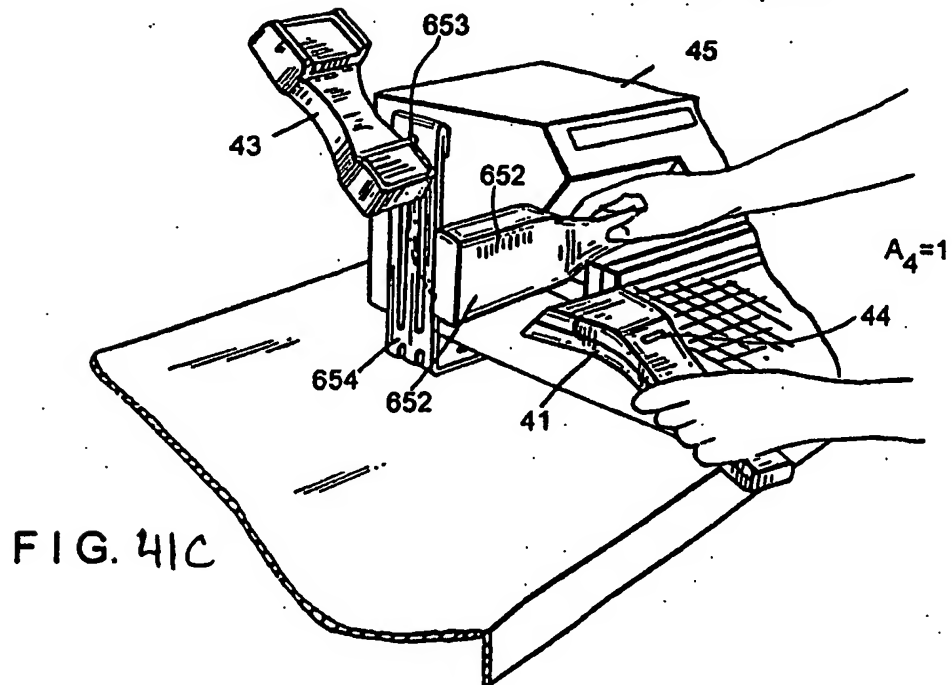
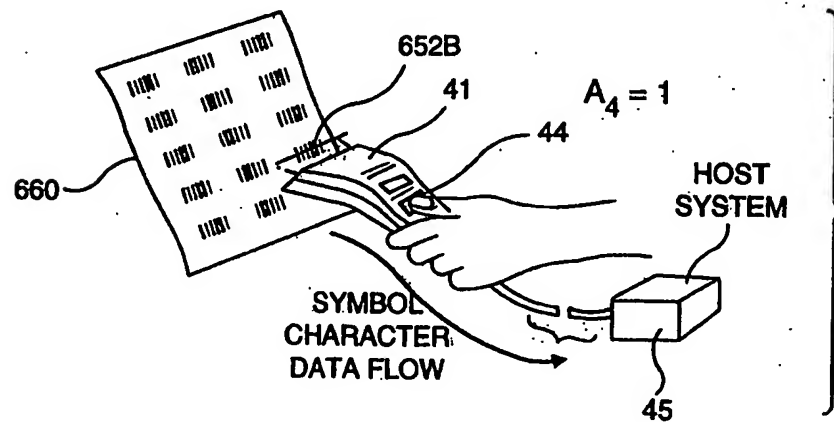
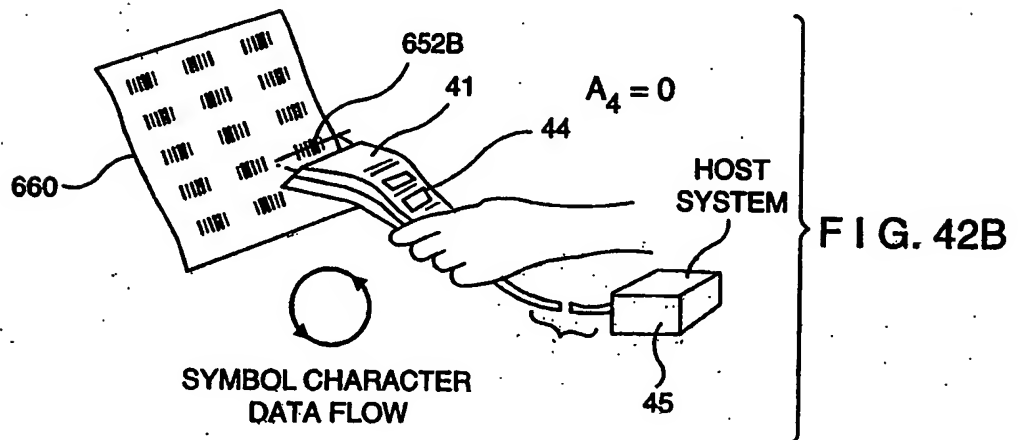
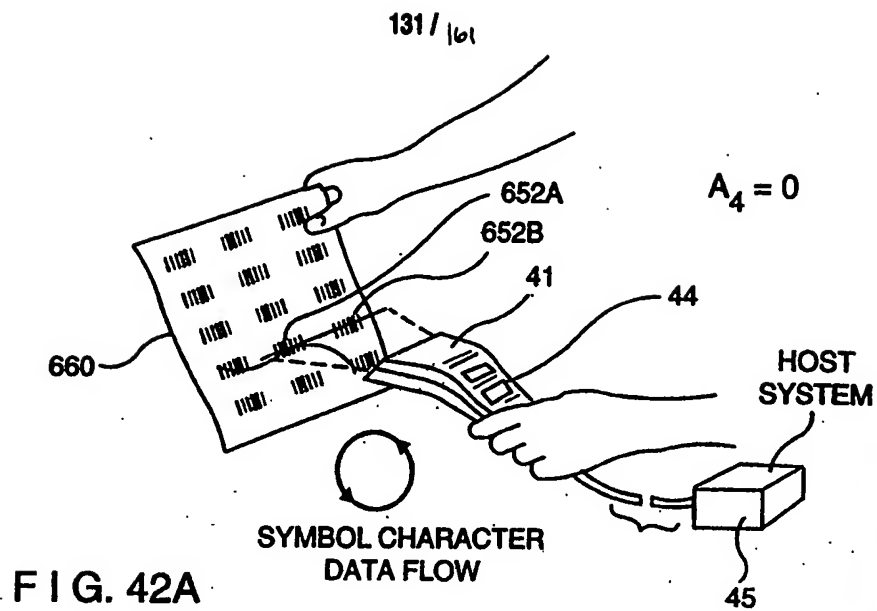
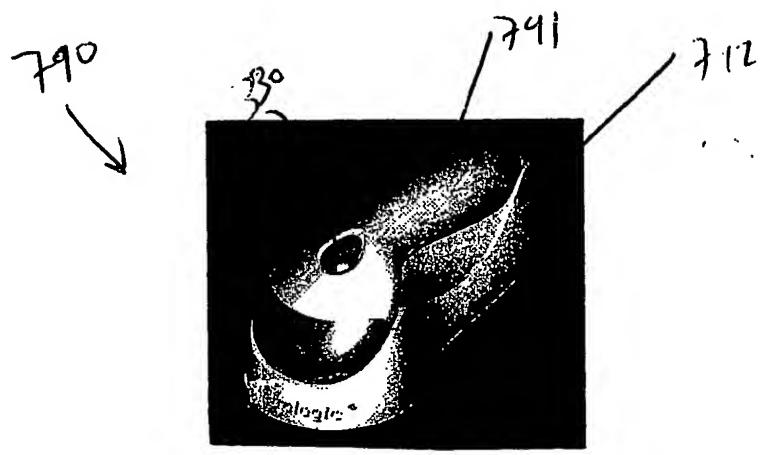


FIG. 41C



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Automatic Barcode
Reading
System with
2-WAY
RF Communication
Link

FIG. 43A

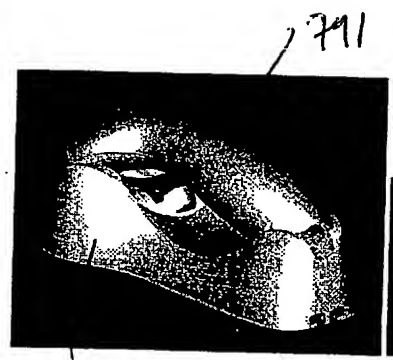


FIG. 43B



FIG. 43C

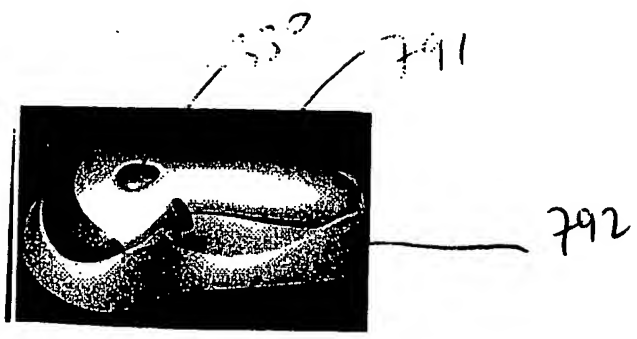


FIG. 43D

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Protracted configuration

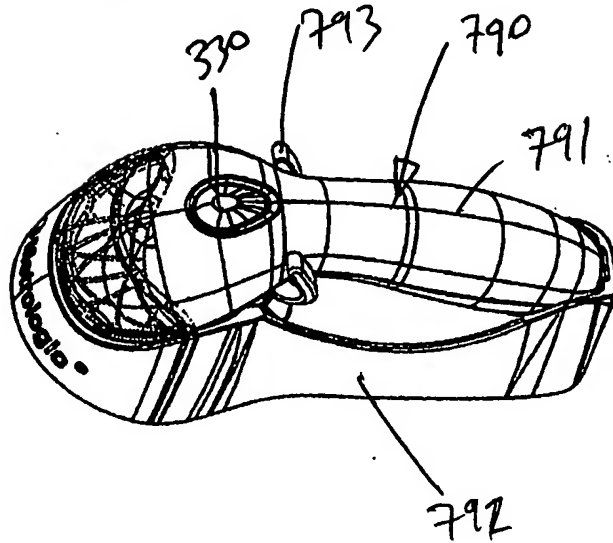


FIG. 43F

Protracted configuration

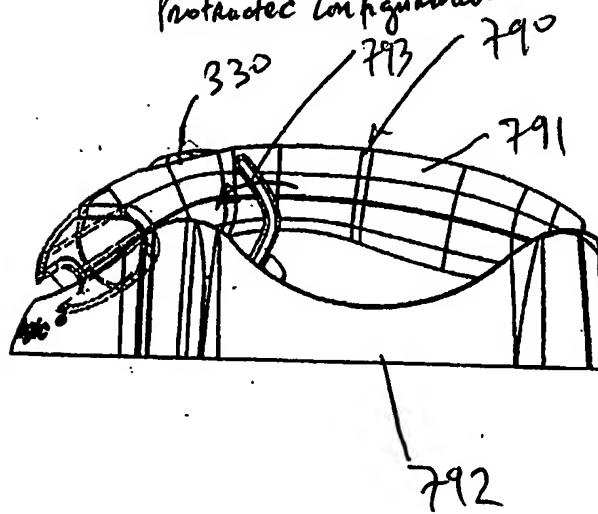


FIG. 43E

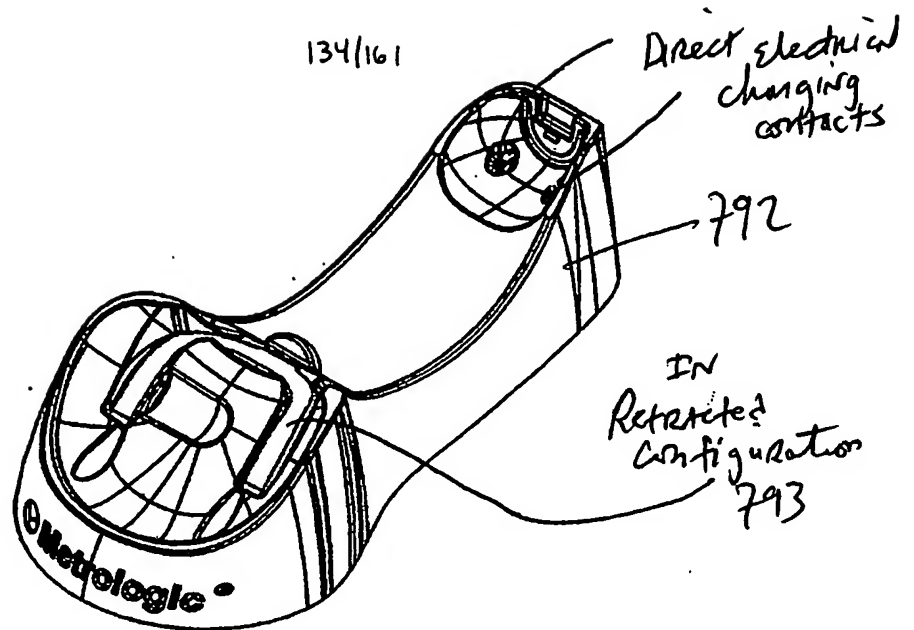


FIG. 43G

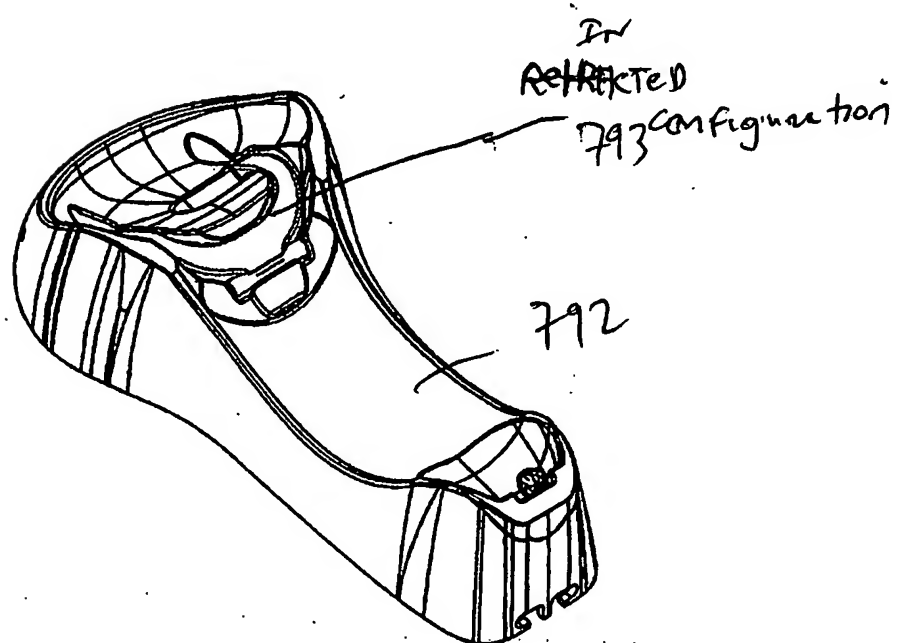


FIG. 43A

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Retracted Configuration
793

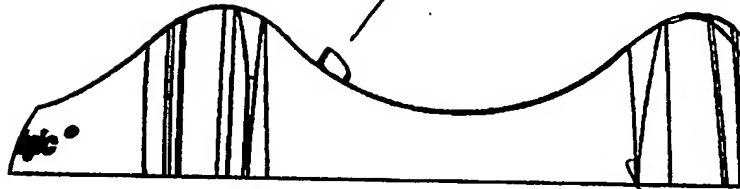


FIG. 43I 792

Projected Configuration
793

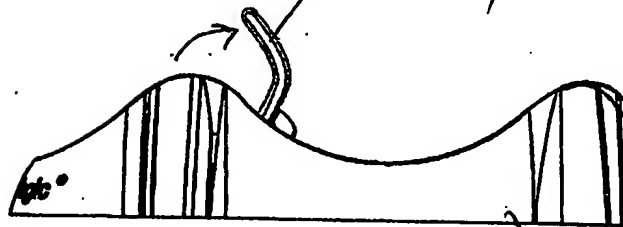


FIG. 43J 792

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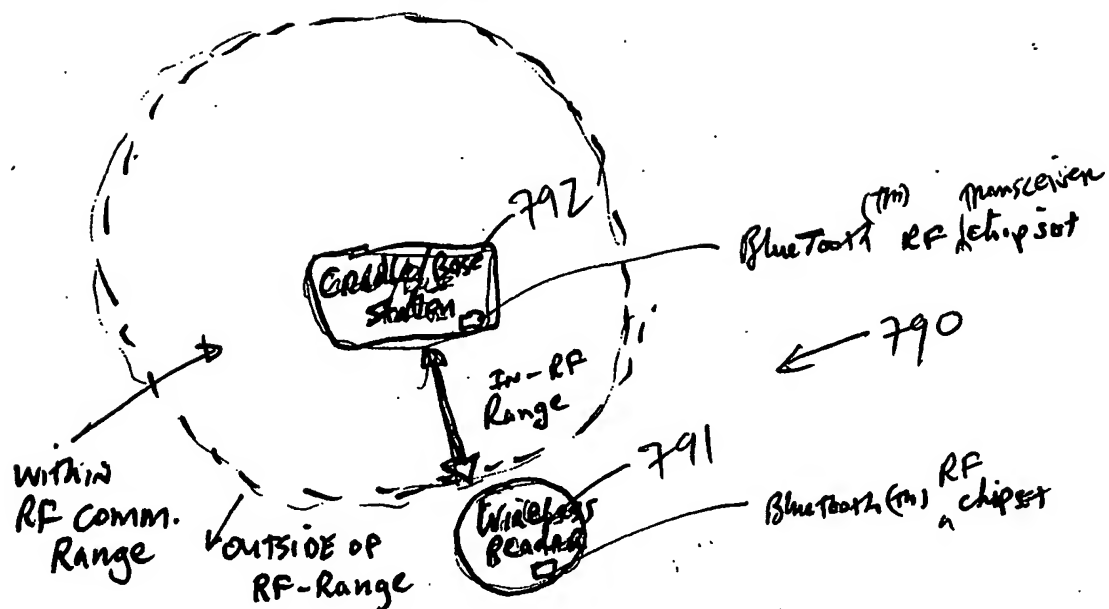


FIG. 44A1

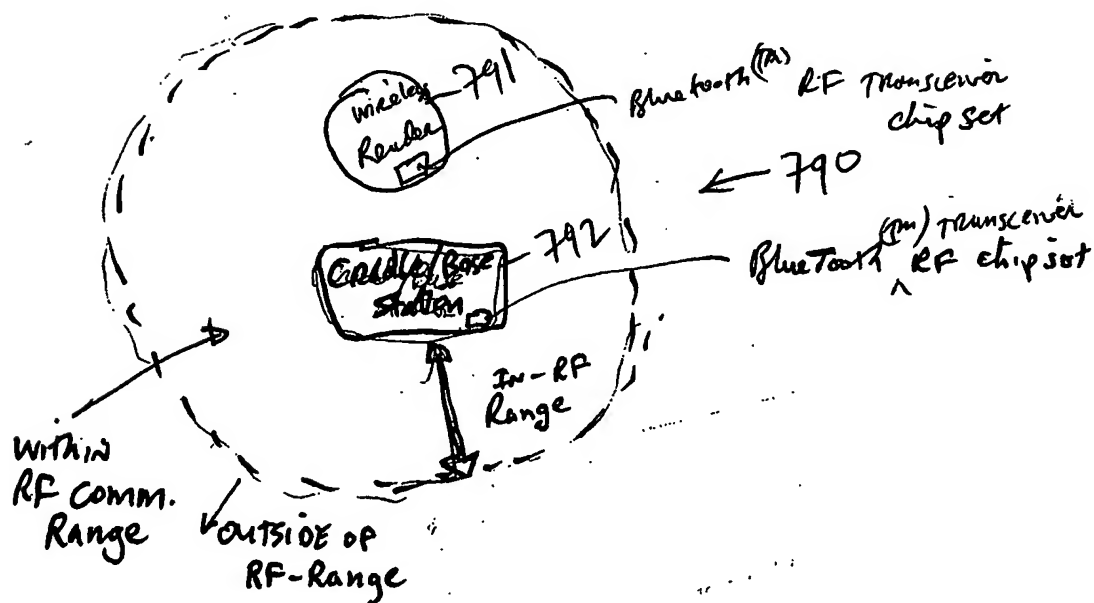
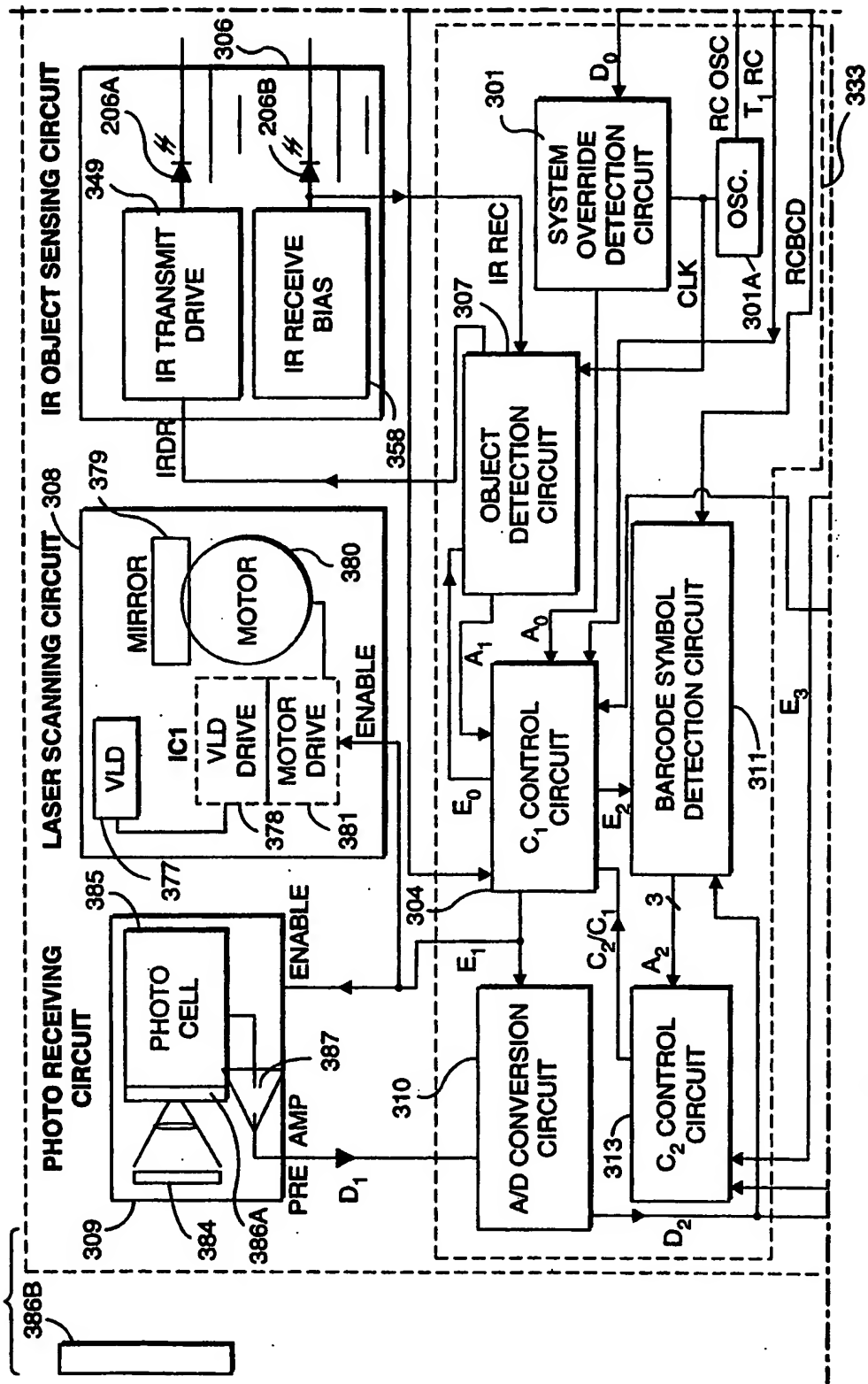


FIG. 44A2

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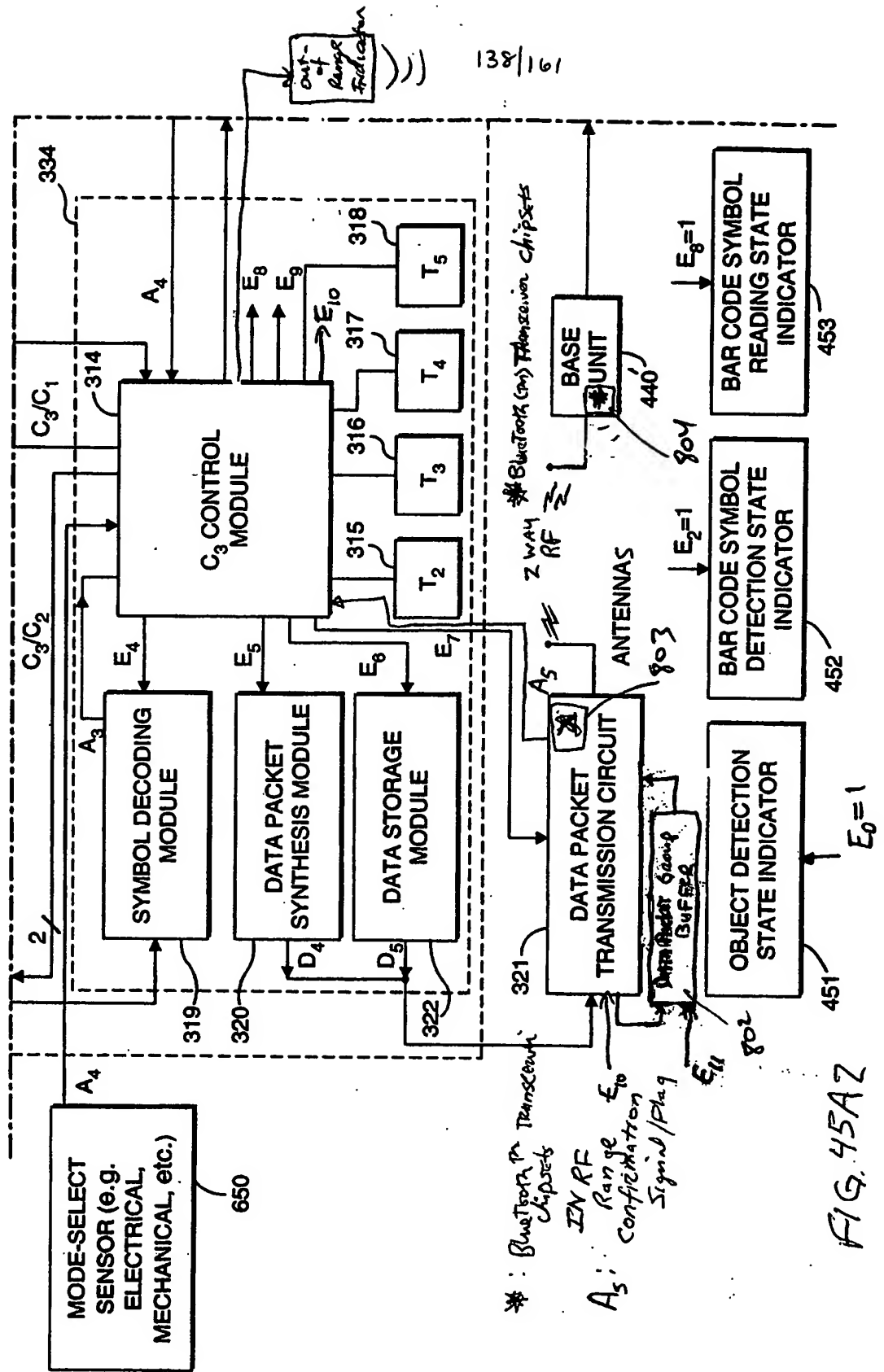
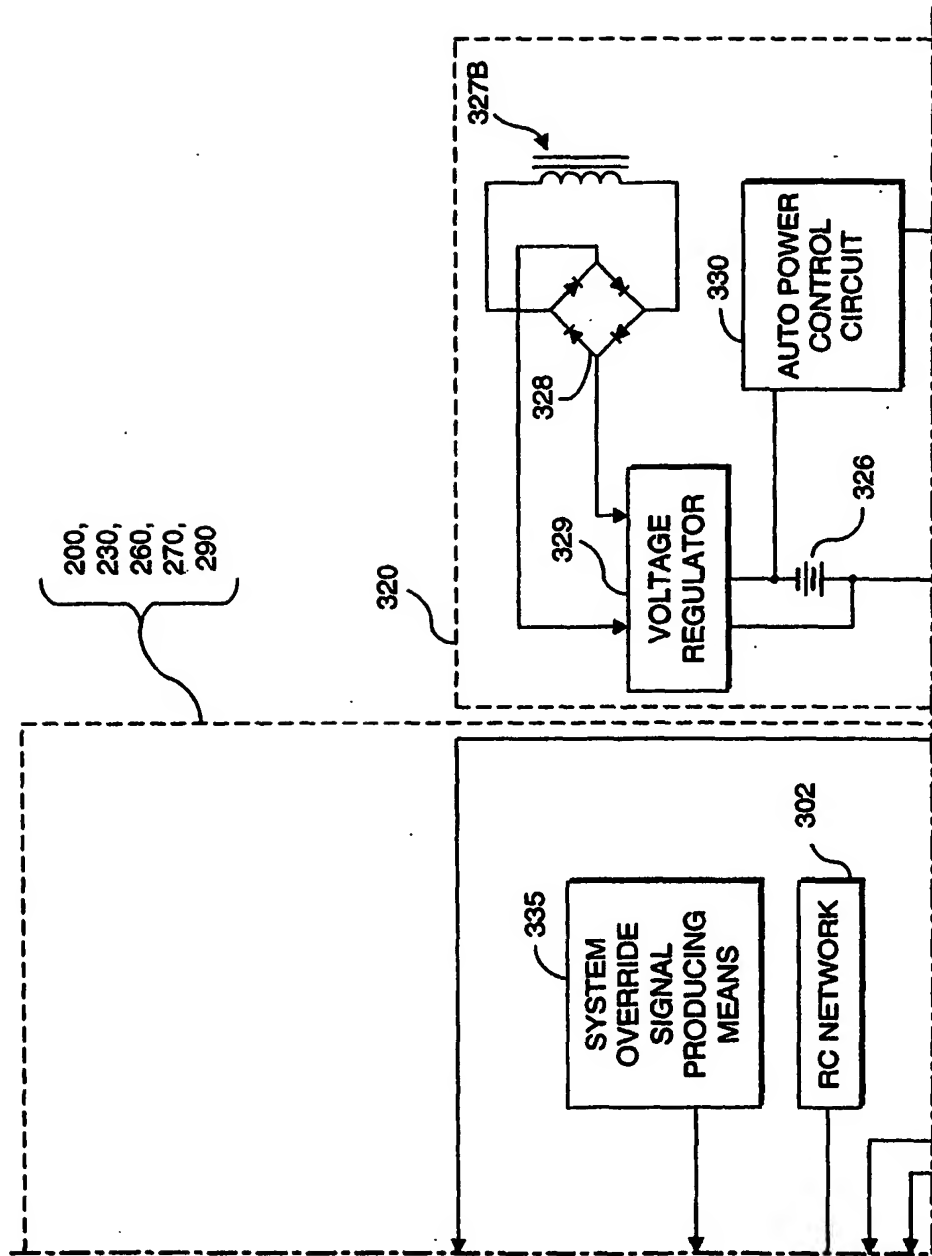


FIG. 45A2



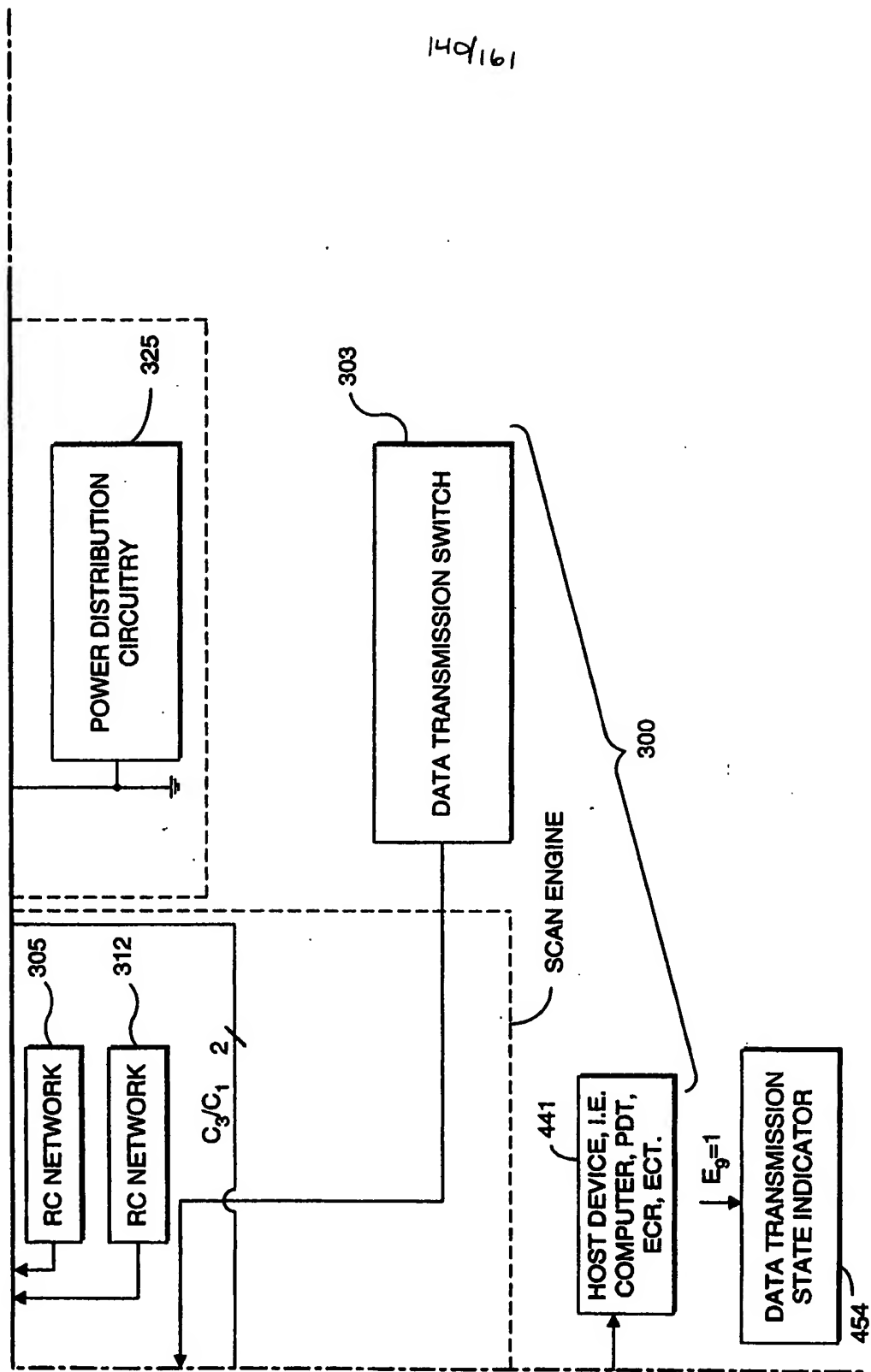


FIG. 45A4

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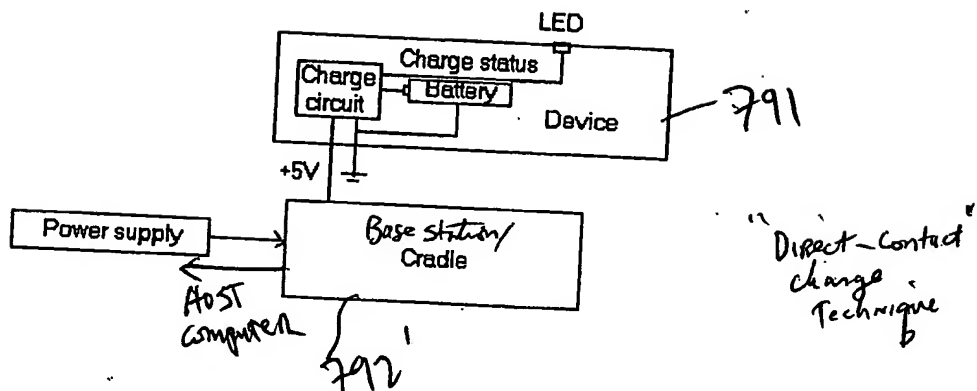


FIG. 45B

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DATA Packet -
Transmission VIA
2-WAY RF WITH Automatic
RF-Range Dependent
Control

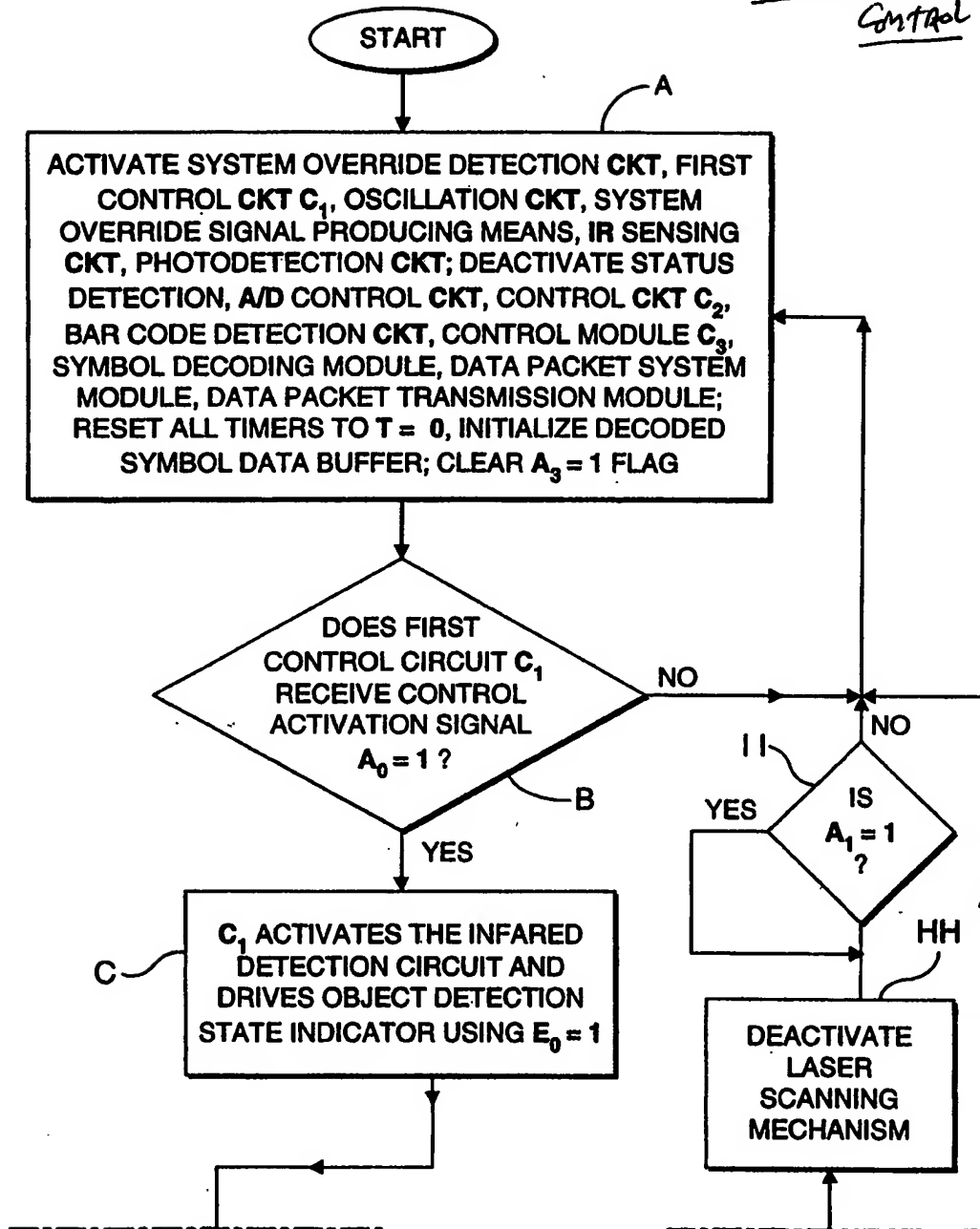


FIG. 46A1

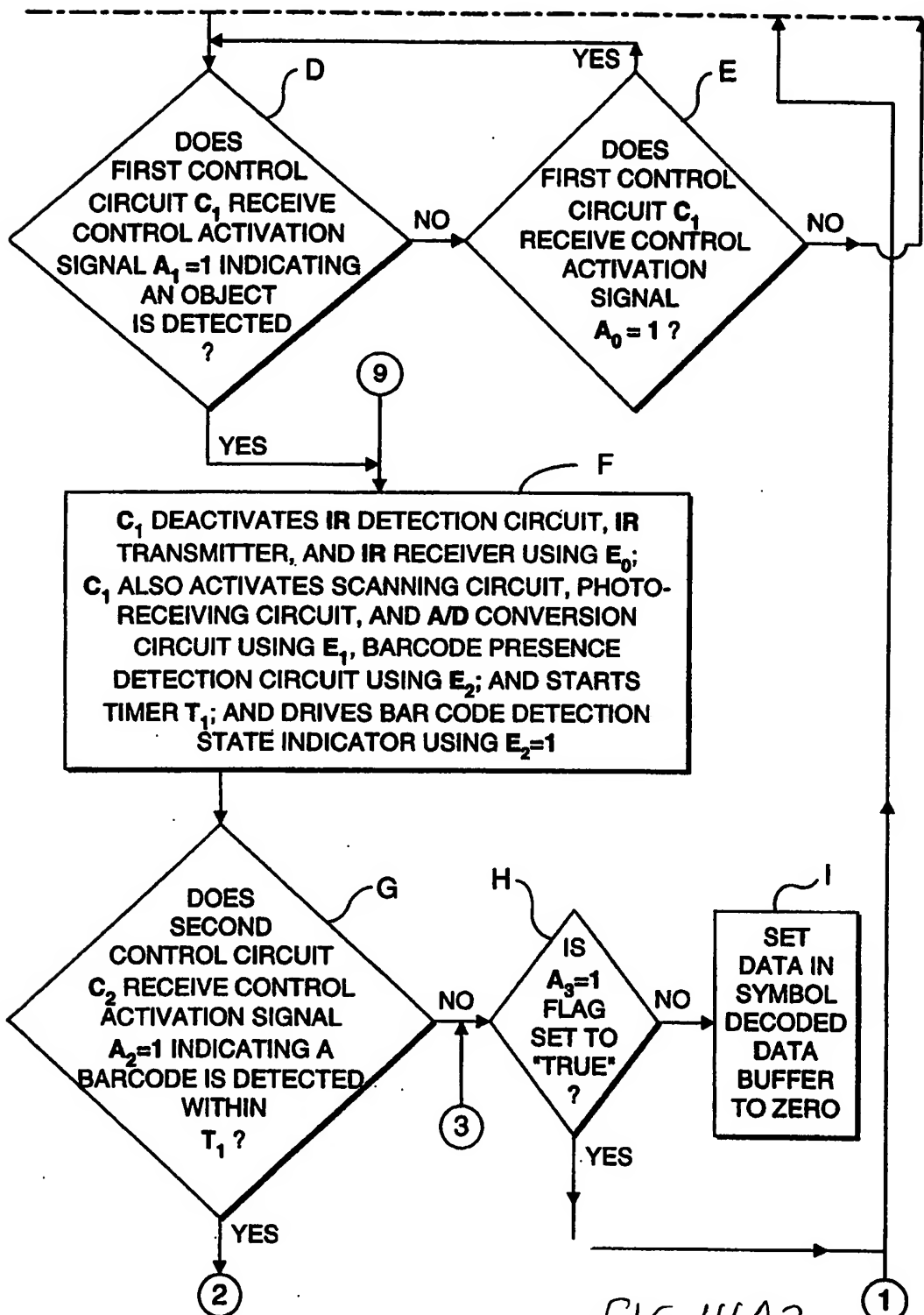
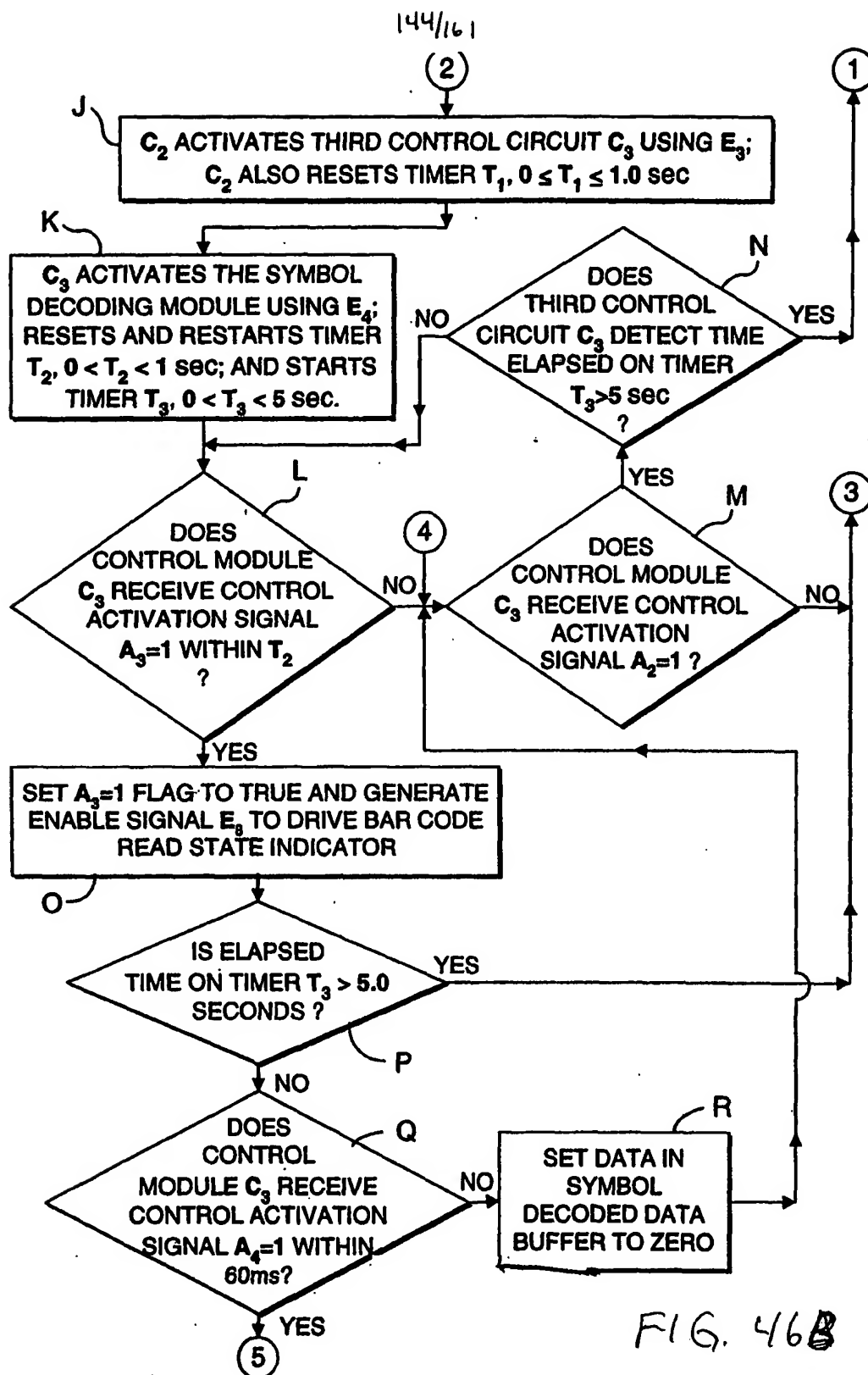


FIG 46A2



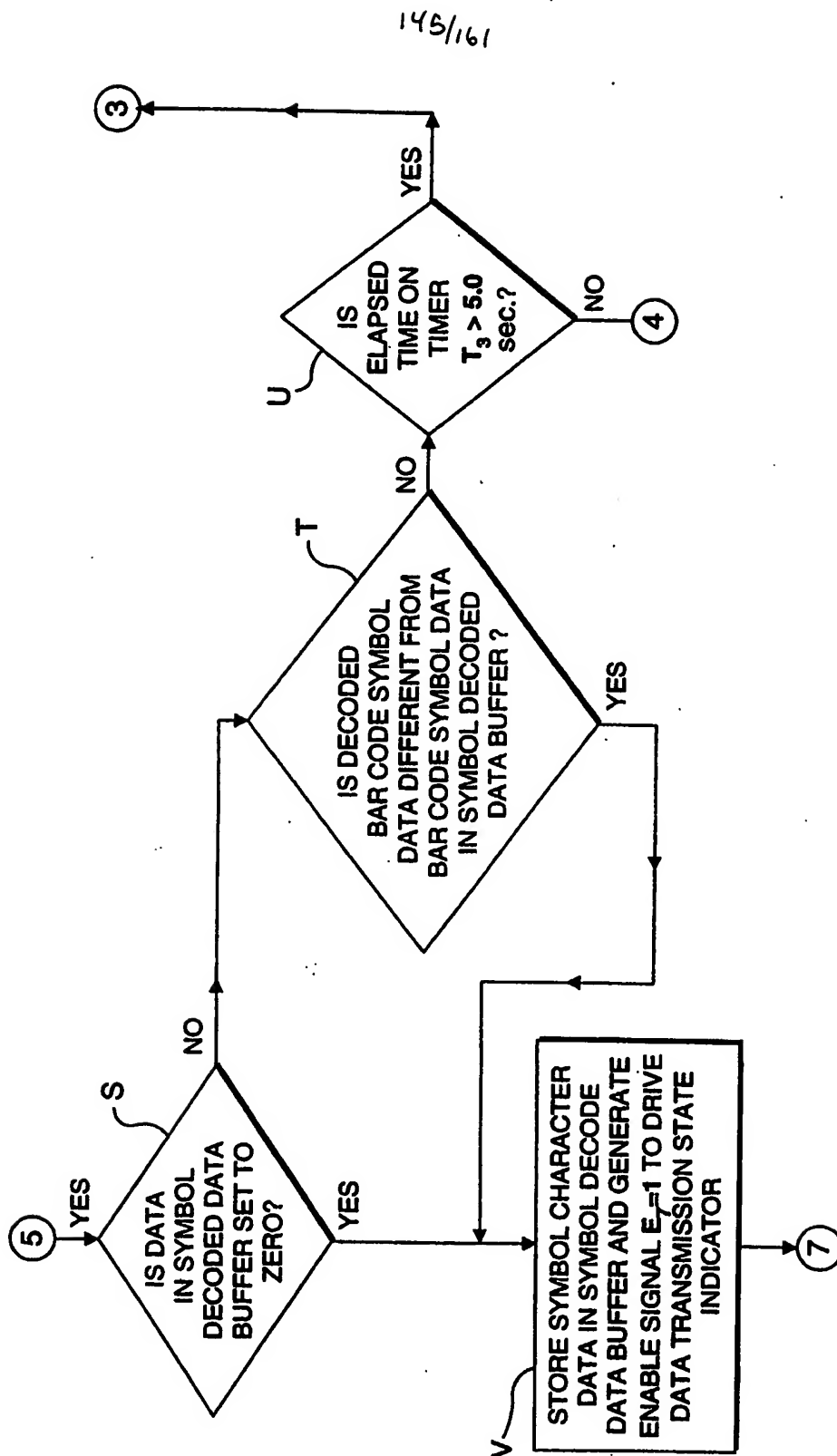


FIG. 46C1

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7

THIRD CONTROL CIRCUIT C_3 CONTINUES ACTIVATION OF LASER DIODE, SCANNING MOTOR, PHOTORECEIVING CIRCUIT, A/D CONVERSION CIRCUIT; DEACTIVATES SYMBOL DECODING MODULE; AND COMMENCES ACTIVATION DATA PACKET SYNTHESIS MODULE

W

UNDER C_3 CONTROL, DATA PACKET SYNTHESIS MODULE CONSTRUCTS DATA PACKET CONSISTING OF SYMBOL CHARACTER DATA, TRANSMITTER NUMBER, DATA PACKET GROUP NUMBER, CHECK CHARACTER AND FRAMING CHARACTERS

X

IS IN-RF RANGE CONFIRMATION Signal $A_5=1$?

NO

YES

NO

ARE DATA PACKET Group(s) STORED IN DATA PACKET Group BUFFER?

YES

YES

C_3 Control Module Generates Enable Signal $E_{11}=1$ Reloading Buffered Data Packet Group(s) into Data Packet Transmission Circuit

AA

Control module C_3 Generates Enable Signal $E_{10}=1$ loading currently Synthesized Data packet Group into Data Packet Transmission Circuit

BB

11

FIG. 46C2

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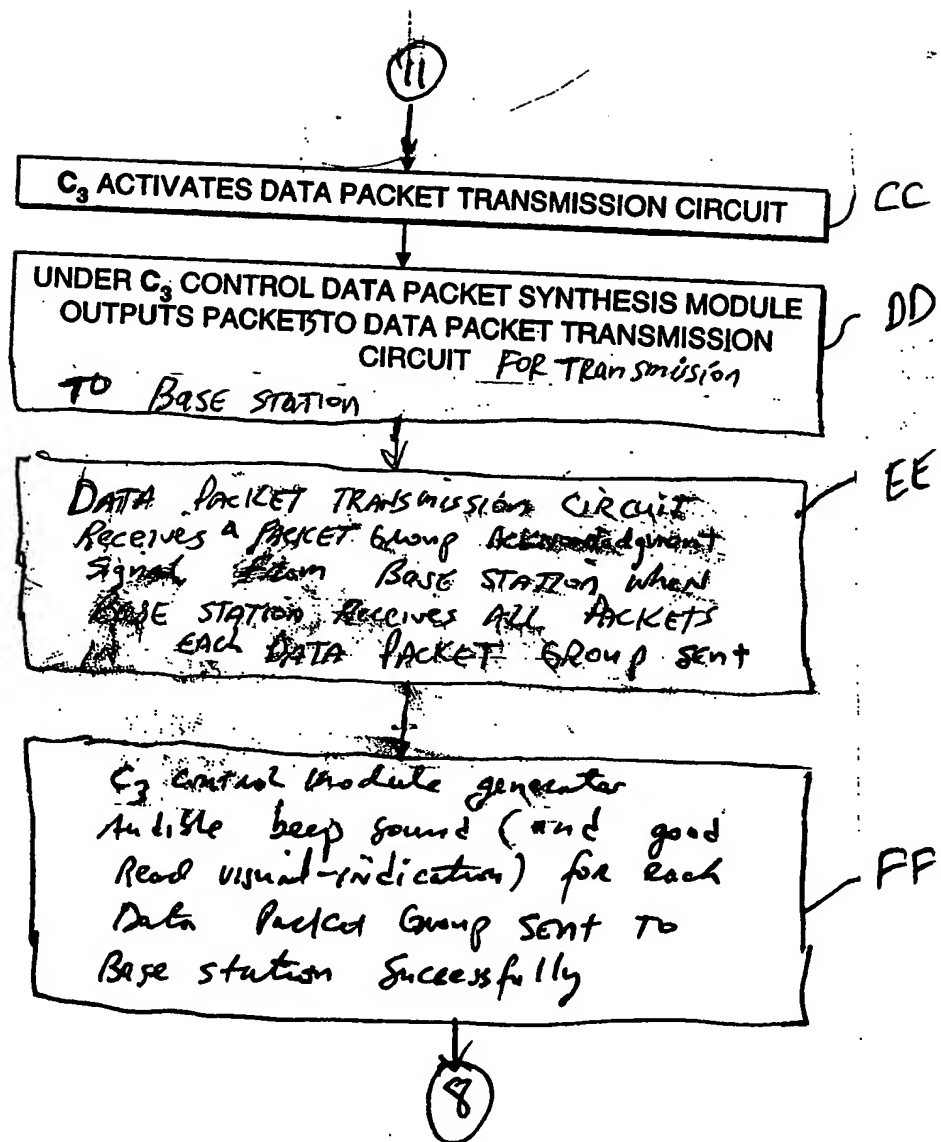


FIG. 46 C3

148 1161

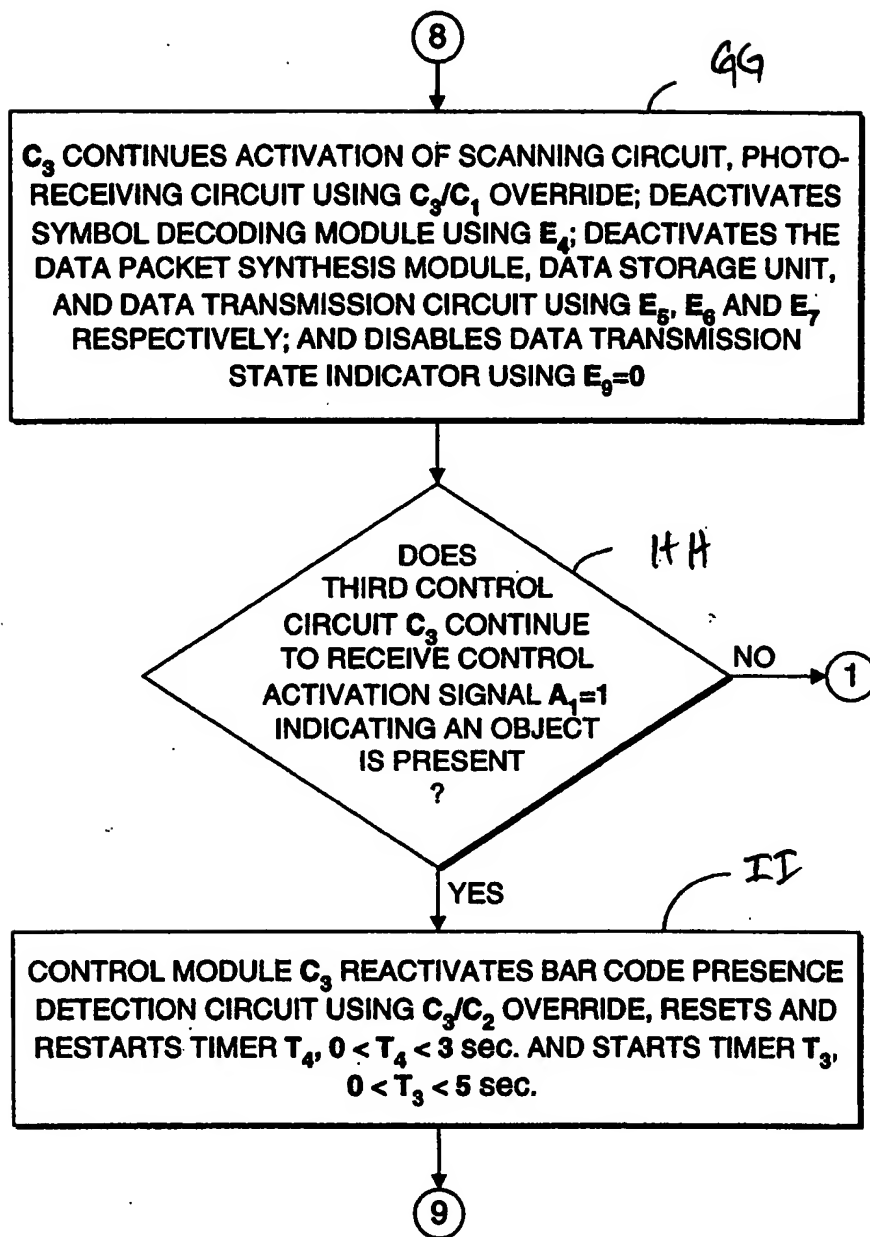


FIG 46 C4

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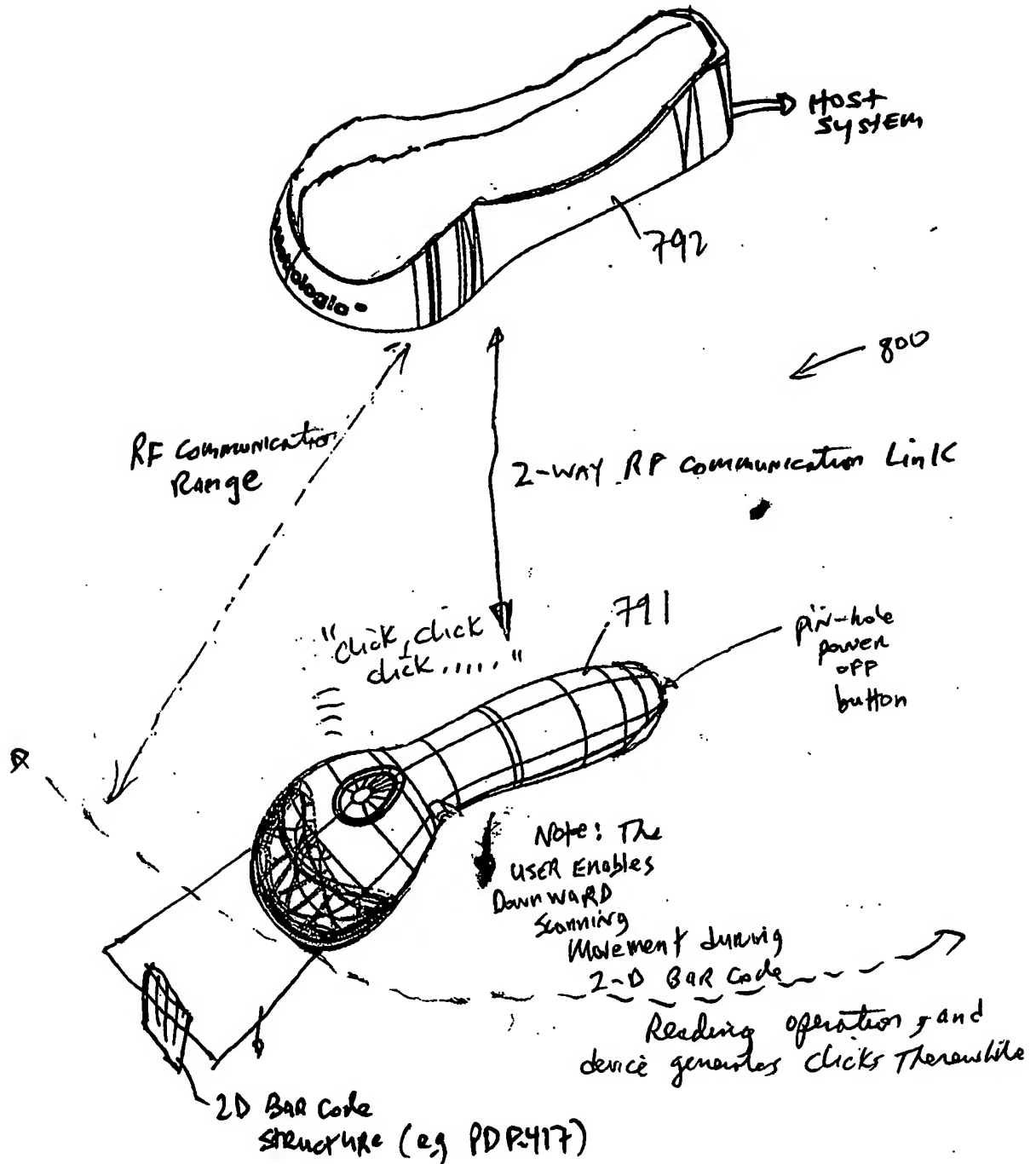


FIG. 47

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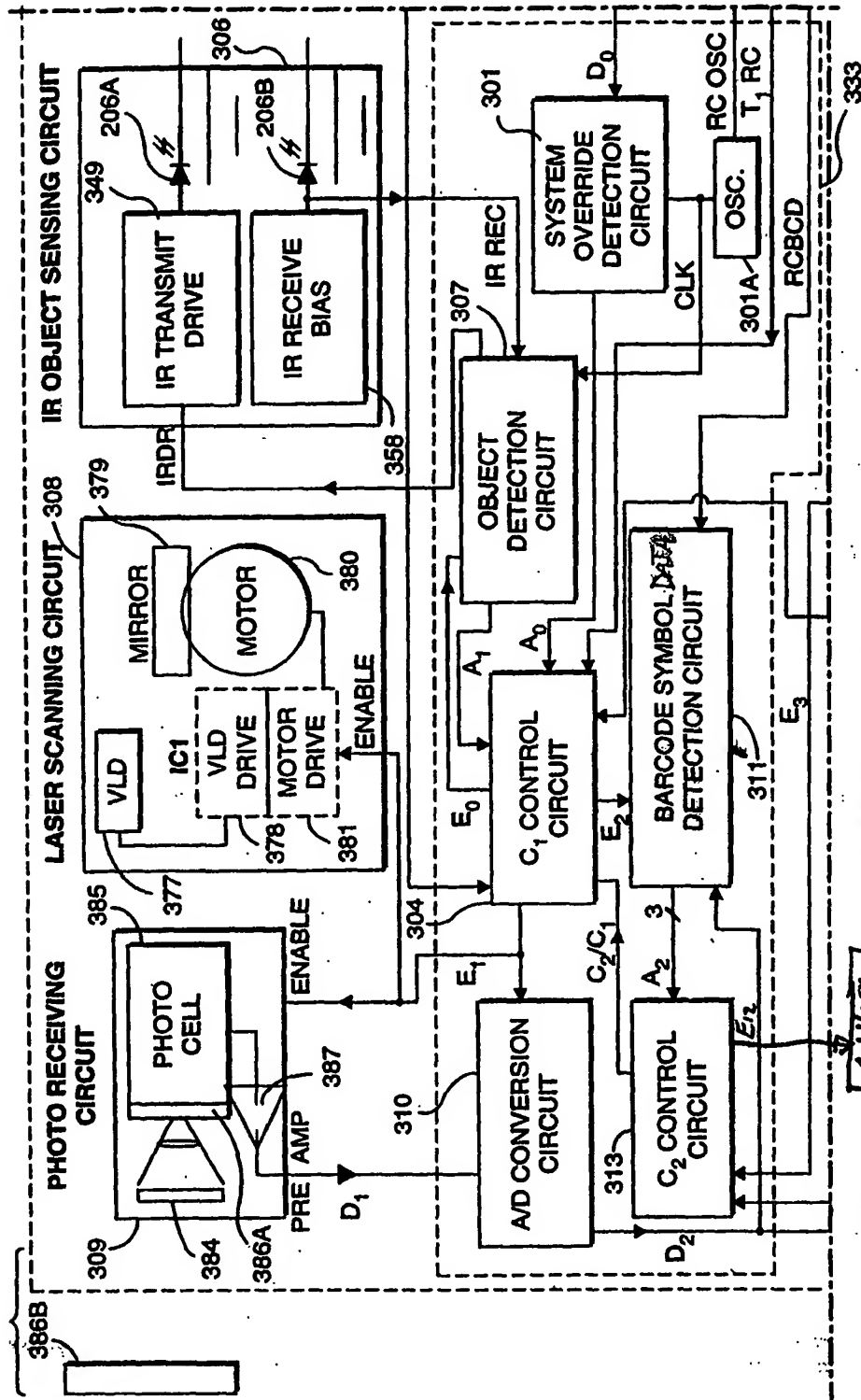


FIG. 47A1

806 (piezo-electric transducer)

Audio Scan Data Capture Buffer Indicator

800

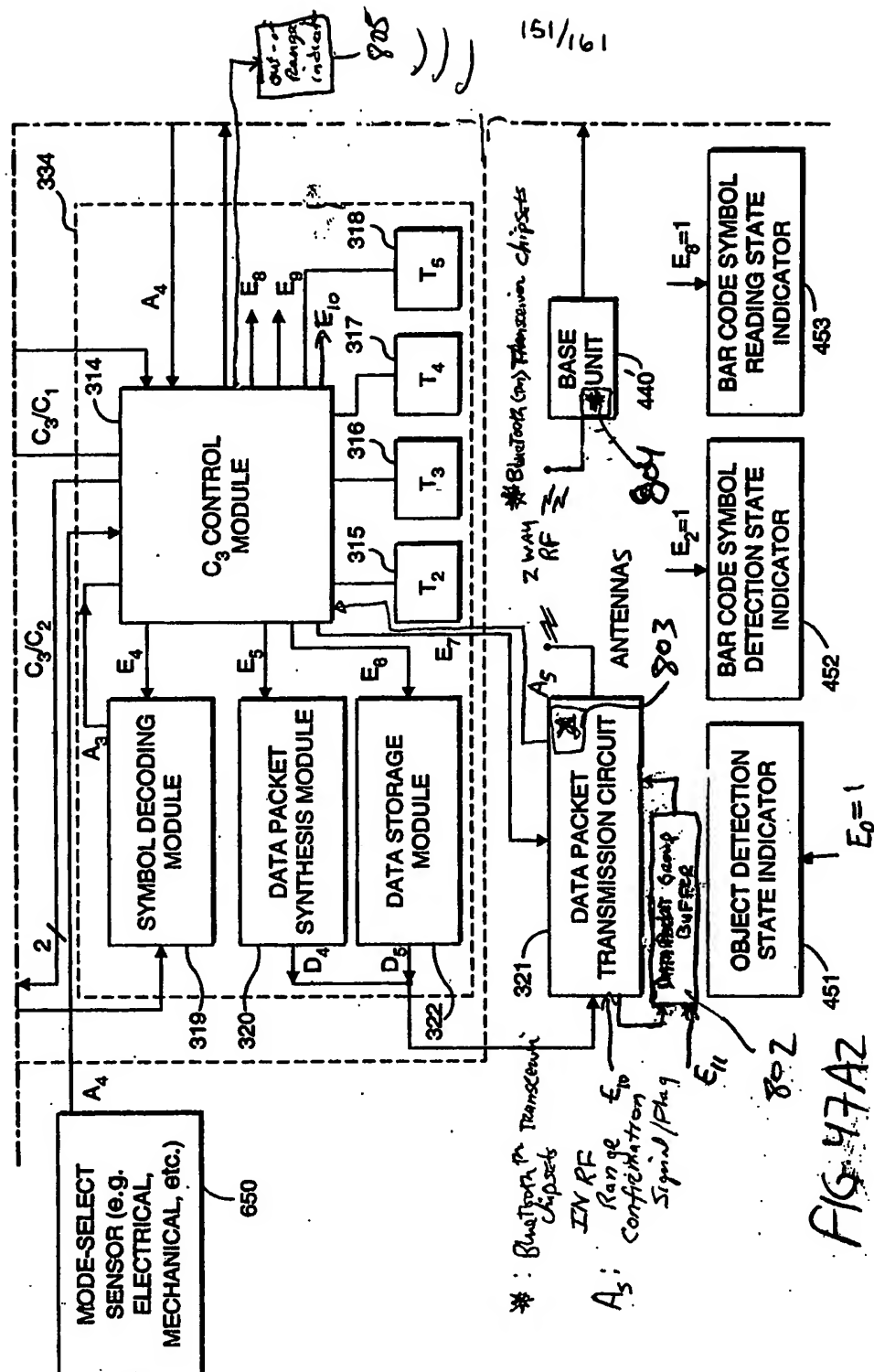
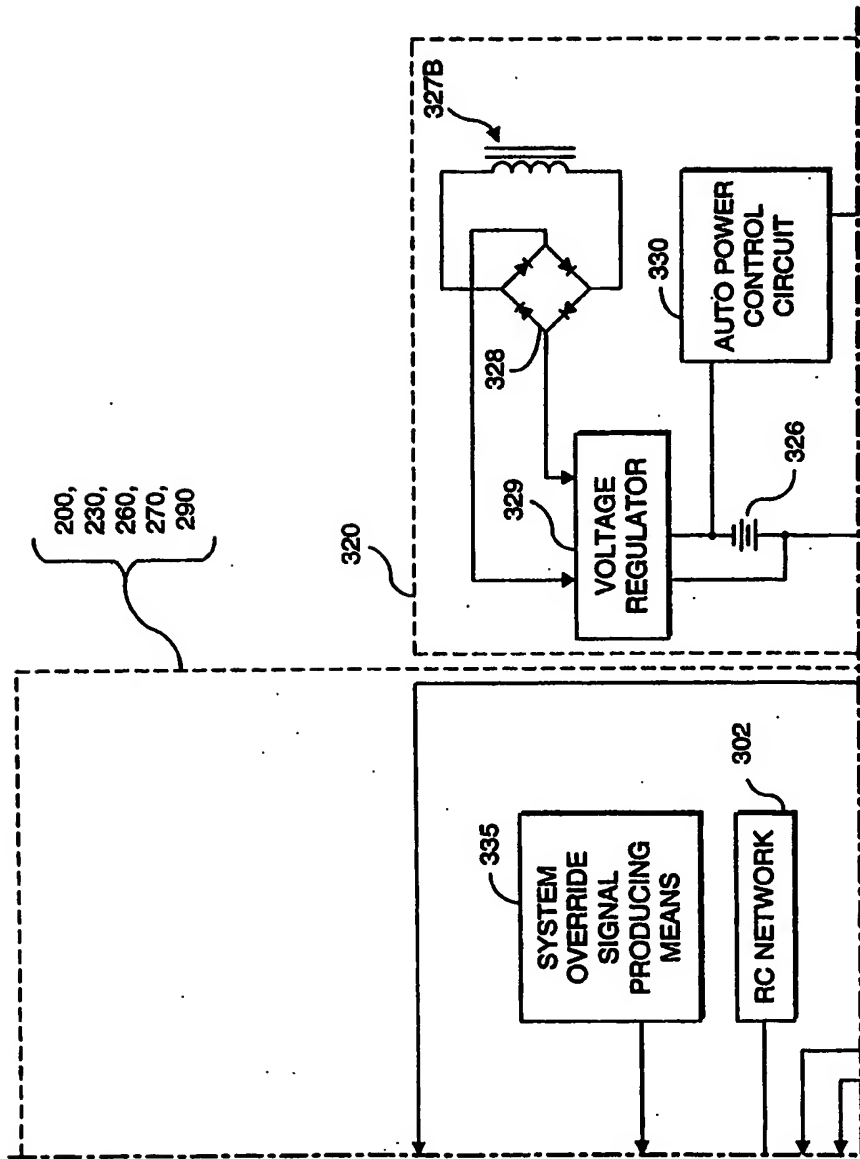


FIG. 47A2

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FIG 47A3



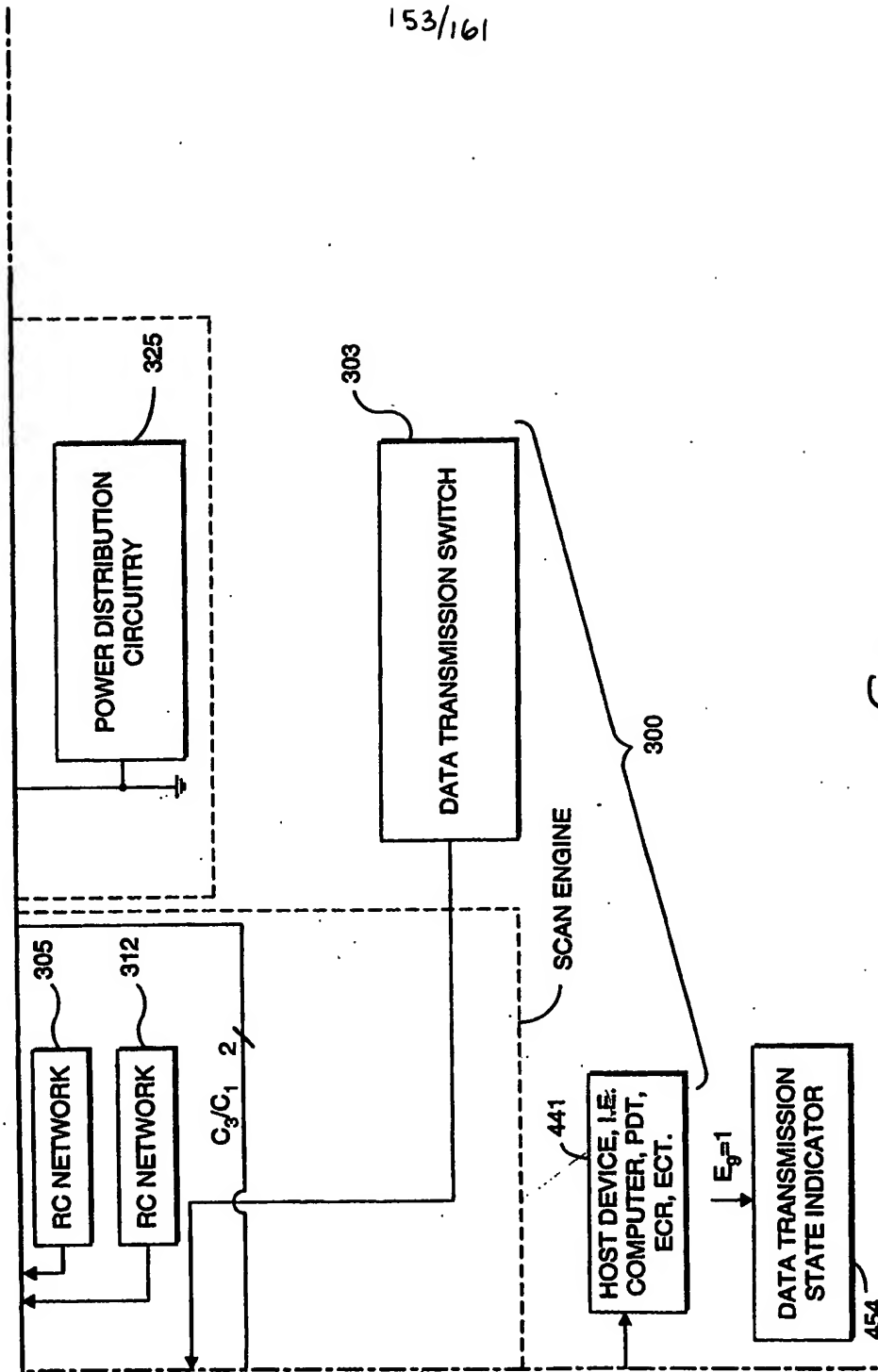


FIG. 47A4

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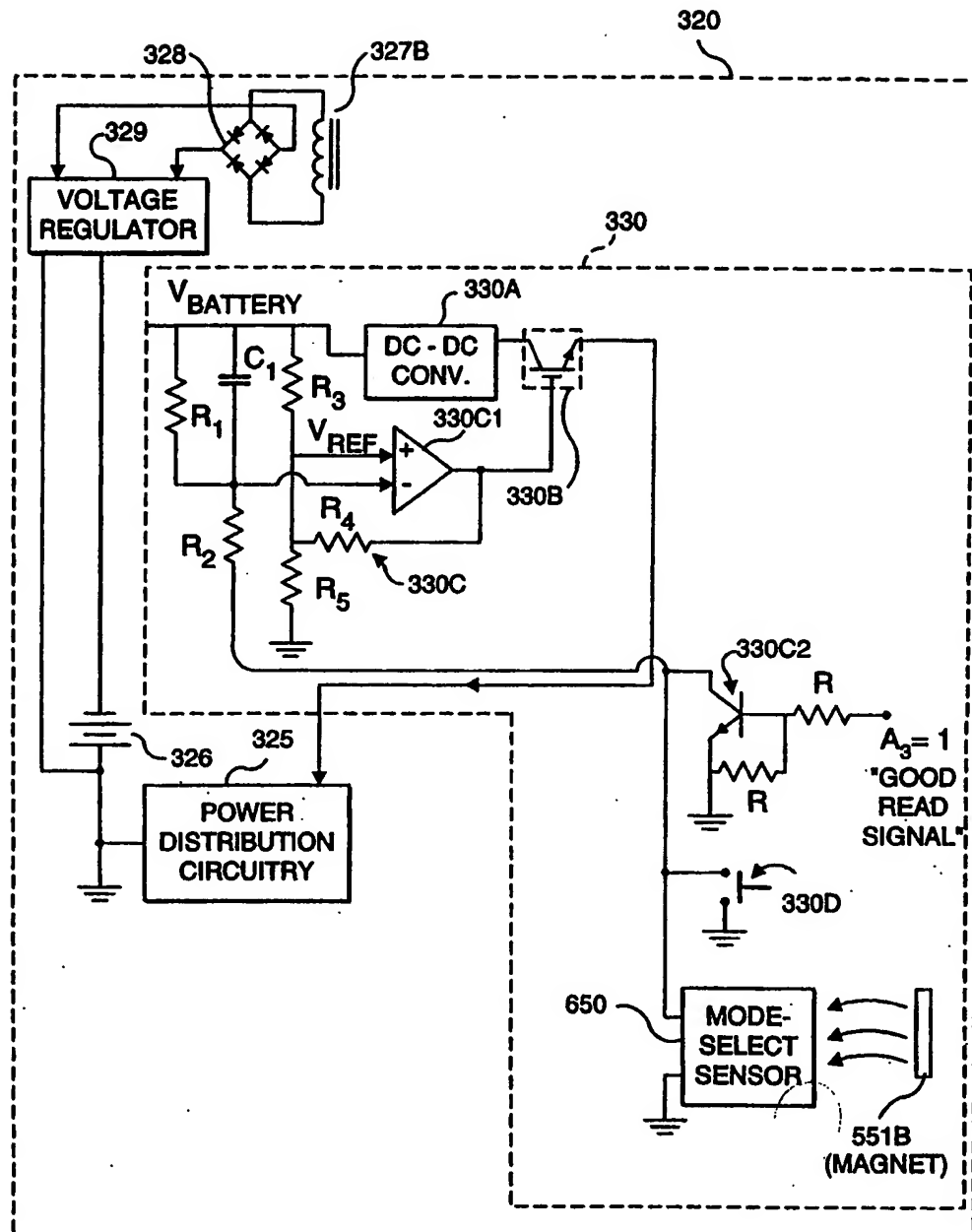


FIG. 47B

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PDF DATA Packet
TRANSMISSION VIA

2-WAY RF WITH Automatic
RF-Range Dependent
Control

(2-D Reading
MODE)

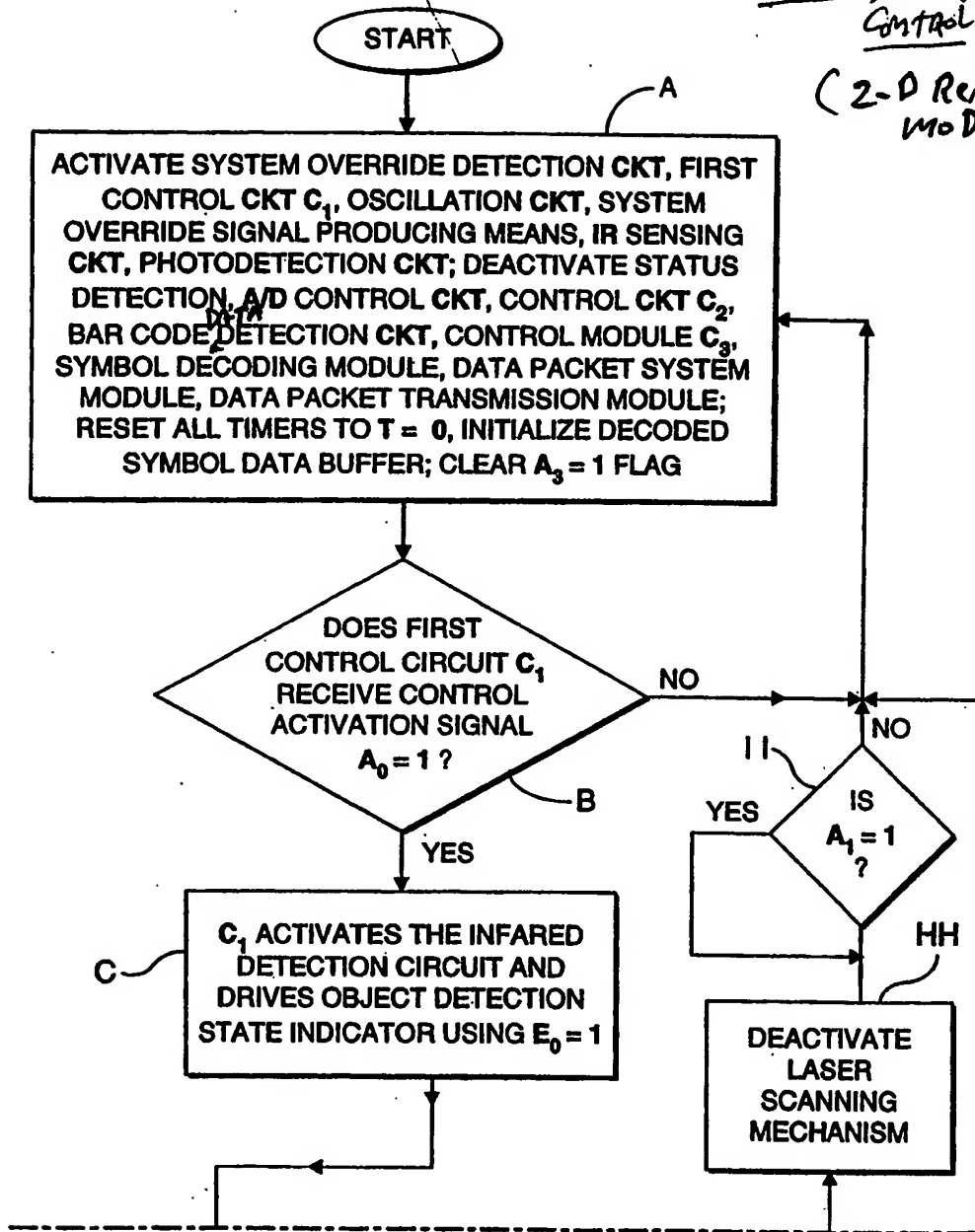


FIG. 48A1

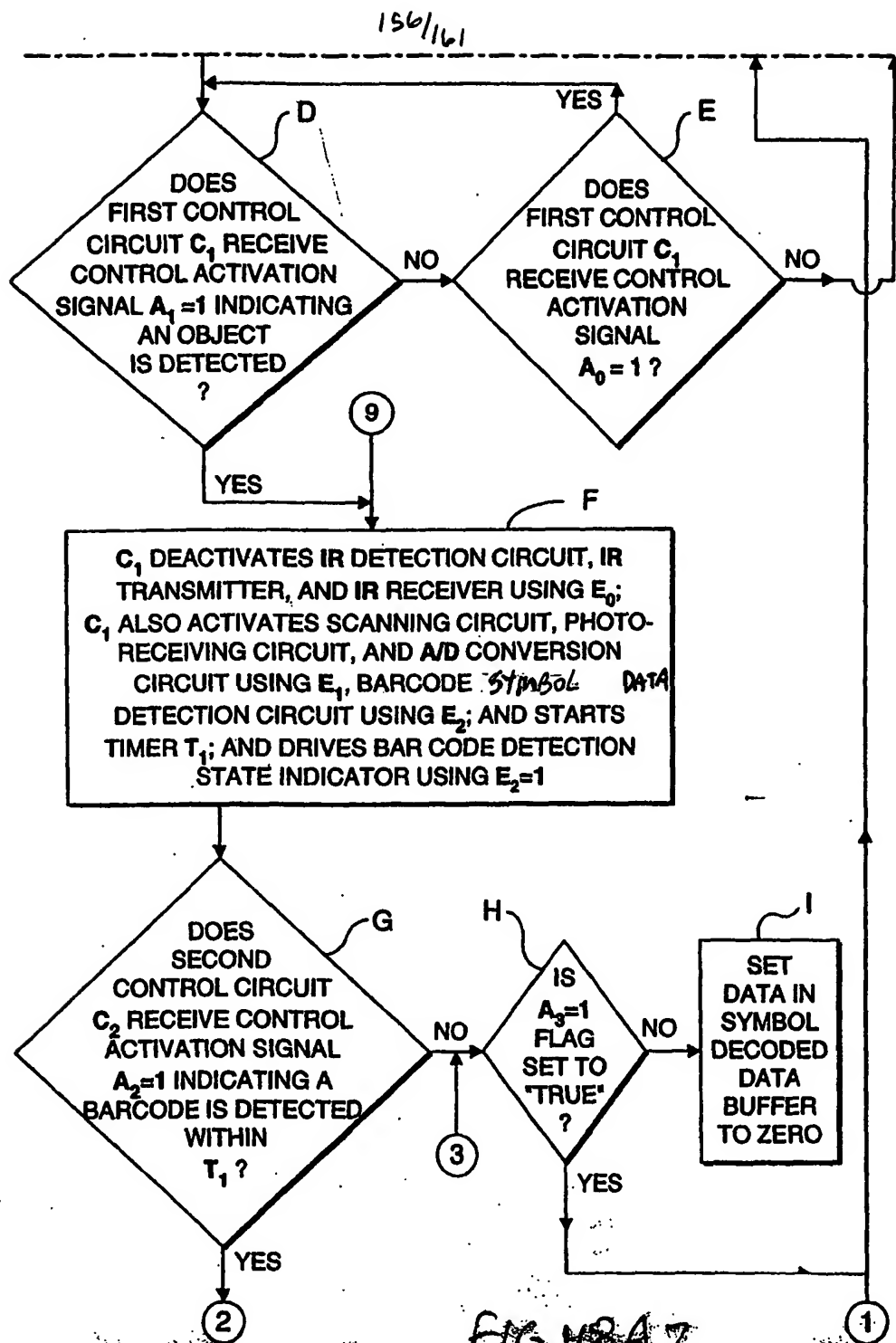
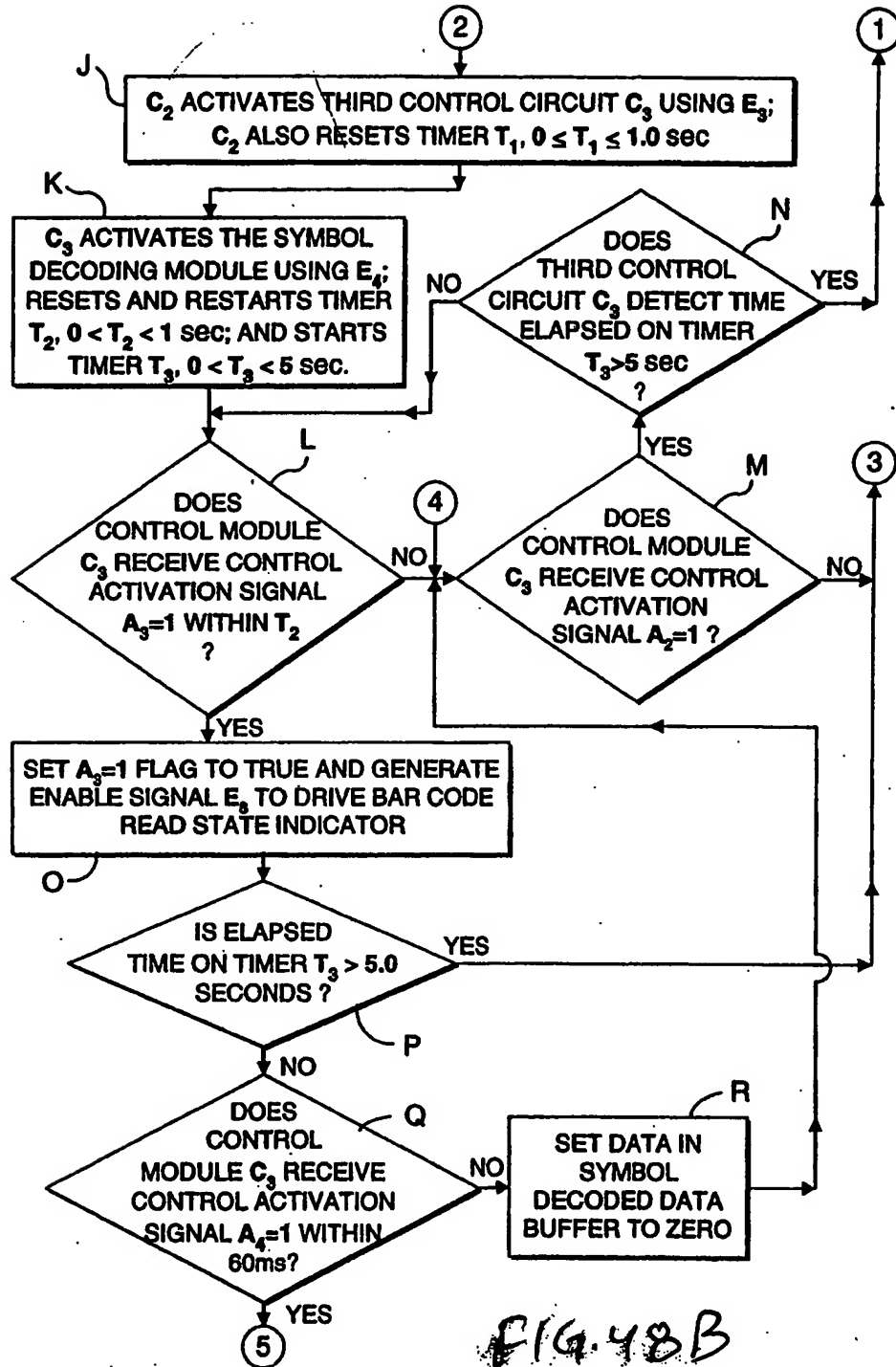


FIG. 12A2

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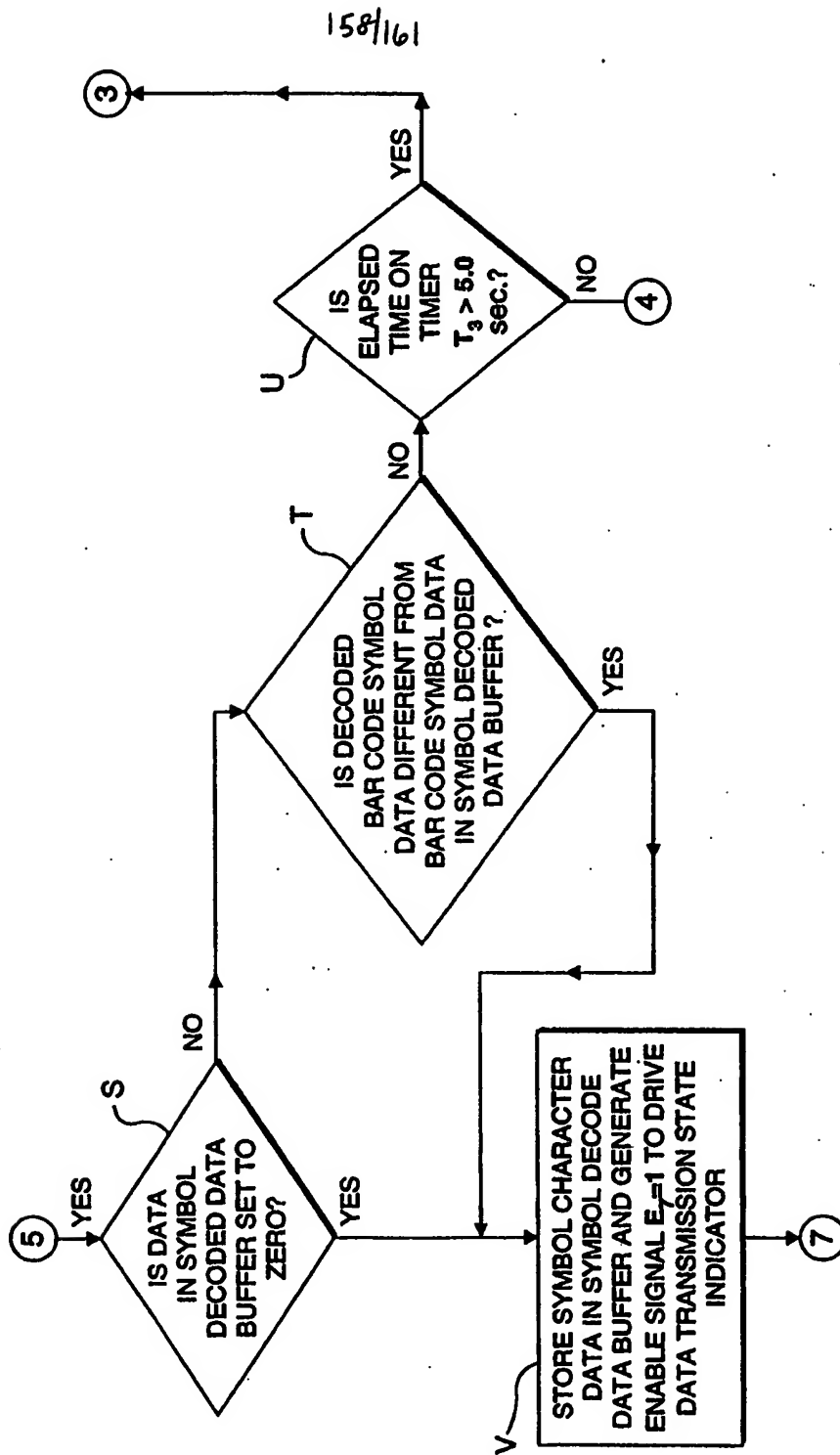


FIG. 48C1

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7

THIRD CONTROL CIRCUIT C_3 CONTINUES ACTIVATION OF LASER DIODE, SCANNING MOTOR, PHOTORECEIVING CIRCUIT, A/D CONVERSION CIRCUIT; DEACTIVATES SYMBOL DECODING MODULE; AND COMMENCES ACTIVATION DATA PACKET SYNTHESIS MODULE

W

UNDER C_3 CONTROL, DATA PACKET SYNTHESIS MODULE CONSTRUCTS DATA PACKET CONSISTING OF SYMBOL CHARACTER DATA, TRANSMITTER NUMBER, DATA PACKET GROUP NUMBER, CHECK CHARACTER AND FRAMING CHARACTERS

X

IS IN-RF RANGE CONFIRMATION SIGNAL $A_5=1$?

NO

YES

ARE DATA PACKET GROUP(S) STORED IN DATA PACKET GROUP BUFFER?

NO

Z

YES

C_3 Control Module Generates Enable Signal $E_{11}=1$ Reloading Buffered Data Packet Group(s) into Data Packet Transmission Circuit

AA

Control Module C_3 Generates Enable Signal $E_{10}=1$ loading currently Synthesized Data packet Group into Data Packet Transmission Circuit

BB

11

FIG. 48CZ

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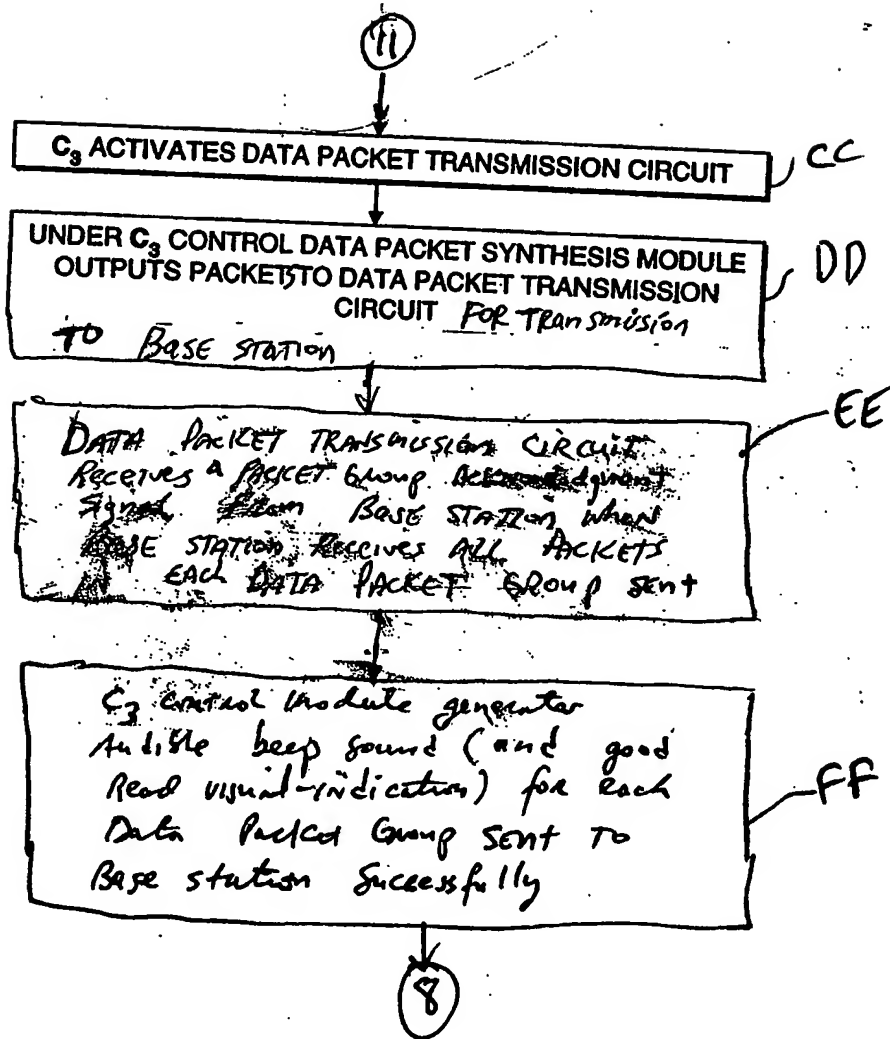


FIG. 48C3

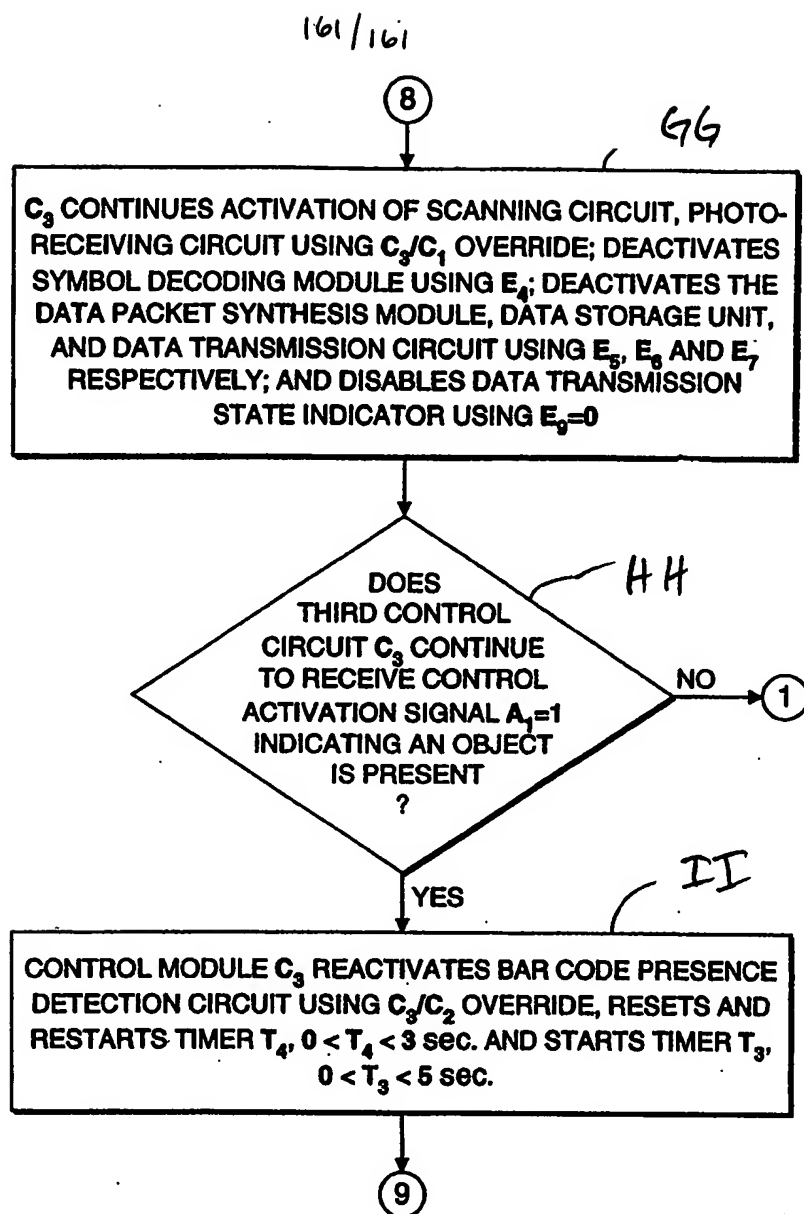


FIG. 48C4